Cycle Time Reduction

Be Fast or Be Last!

achievement dynamics

Deere & Company
Revised November 1996

BUSINESS PROCESS IMPROVEMENT
(BPI)

through

CYCLE TIME REDUCTION
"BE FAST OR BE LAST"

IMPLEMENTATION WORKSHOP

Getting The Most From This Workshop

❶ Have fun!
  - You learn more when you relax, think positive and enjoy yourself.

❷ Set an Organizational Goal(s)
  - During the course of this workshop, take the time to set at least one specific organizational goal related to Cycle Time Reduction. The idea for your goal will generally come from the content of this program.

❸ Make Contact with Your Seminar Leader
  - Come early to the session or take advantage during breaks, lunch and after the session to make personal contact with the instructor. He or she will become more aware of your particular situation and may be able to tailor examples or comments more toward your situation.

❹ Participate!!
  - Ask questions, offer examples, volunteer your contribution---you'll benefit from the participation. It will help stimulate ideas and solutions specifically related to your concerns. The instructor and the other attendees may be able to help you. It will encourage involvement by the other attendees and prompt creative opportunities and solutions. Please, however, be considerate of your fellow attendees. Don't monopolize the floor, interrupt or attack others, and always be constructive in your presentation.

❺ Meet and Get to Know the Workshop Attendees
  - Networking is a valuable and effective method to share ideas, information, and opportunities. Exchange business cards and make a point of meeting new people during breaks and lunch.

Getting The Most From This Workshop

❻ Take Notes
  - Make them neat and concise the first time. Take your notes in the workbook for easy reference. Don't hesitate to ask questions to clarify your notes.

❼ Pass It On
  - When you go back to your company, make it a specific action item or goal to transfer what you have learned to others in the organization and suggest a plan for the implementation of a Cycle Time Reduction program. Do it quickly before you lose your motivation, excitement and enthusiasm.

You will play the major role in determining the degree of effectiveness of this workshop. The extent of the benefits that both you and your company will receive is directly related to attitude and participation. Have fun and enjoy this excellent opportunity.

WORKSHOP AGENDA

- MODULE ONE--INTRODUCTION TO CYCLE TIME REDUCTION (CTR)--Pg. 4
  - Workshop Agenda
  - Introducing CTR
  - The Influence of Time
  - Video Introduction
  - Why CTR?
  - CTR Bottle Exercise
  - Examining Traditional Business Practices
  - Total Quality and ***"Speed"***
- MODULE TWO--PREPARING FOR THE TEAM PROCESS--Pg. 27
  - Deployment Planning
  - Identifying Core Business Processes
  - Developing the Team Charter
  - Measuring the Impacts of ***Speed***
  - Measures of Process Effectiveness (quality)
  - Measures of Process Efficiency (productivity)

WORKSHOP AGENDA
(continued)

- MODULE THREE--ANALYZING THE CURRENT PROCESS--Pg. 47
  - -- Deliverables
  - -- Process Mapping
    - -- Top Down Flow chart
    - -- Wall mapping
    - -- Product Process Map
- MODULE FOUR--DETERMINING DESIRED OUTCOME--Pg. 77
  - -- Value-Added vs. Non Value-Added
  - -- Entitlement
  - -- "Can Be" Process Mapping
- MODULE FIVE--ROOT CAUSES AND PROBLEM SOLVING--Pg. 92
  - -- The Barriers to ***Speed***
  - -- Root Cause Analysis
  - -- Identifying Improvement Opportunities
  - -- Implementing Solutions
  - -- Action Planning

WORKSHOP OBJECTIVES

Understanding the Impact of ***Speed*** and Cycle Time Reduction

Continue to Build Total Quality Skills for the Successful Implementation of CTR

Process Mapping the "Core" Business Processes

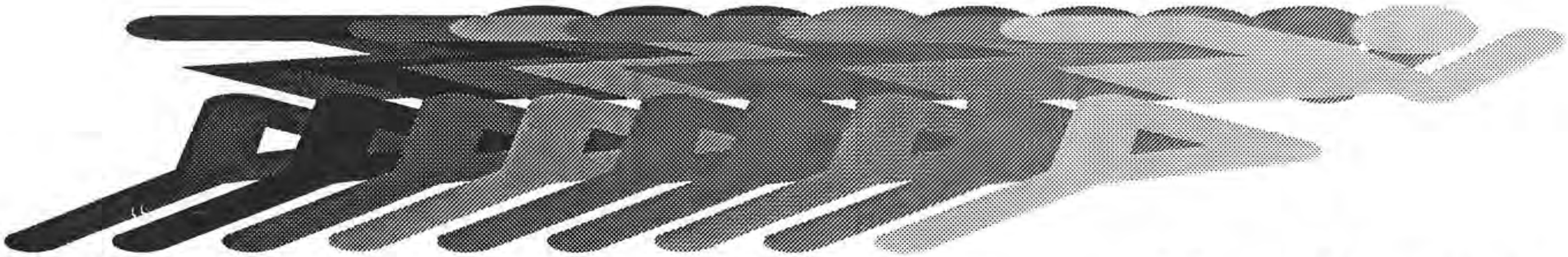
The "Fast Track" Implementation of CTR

Teamwork Deployment for Continuous Improvement

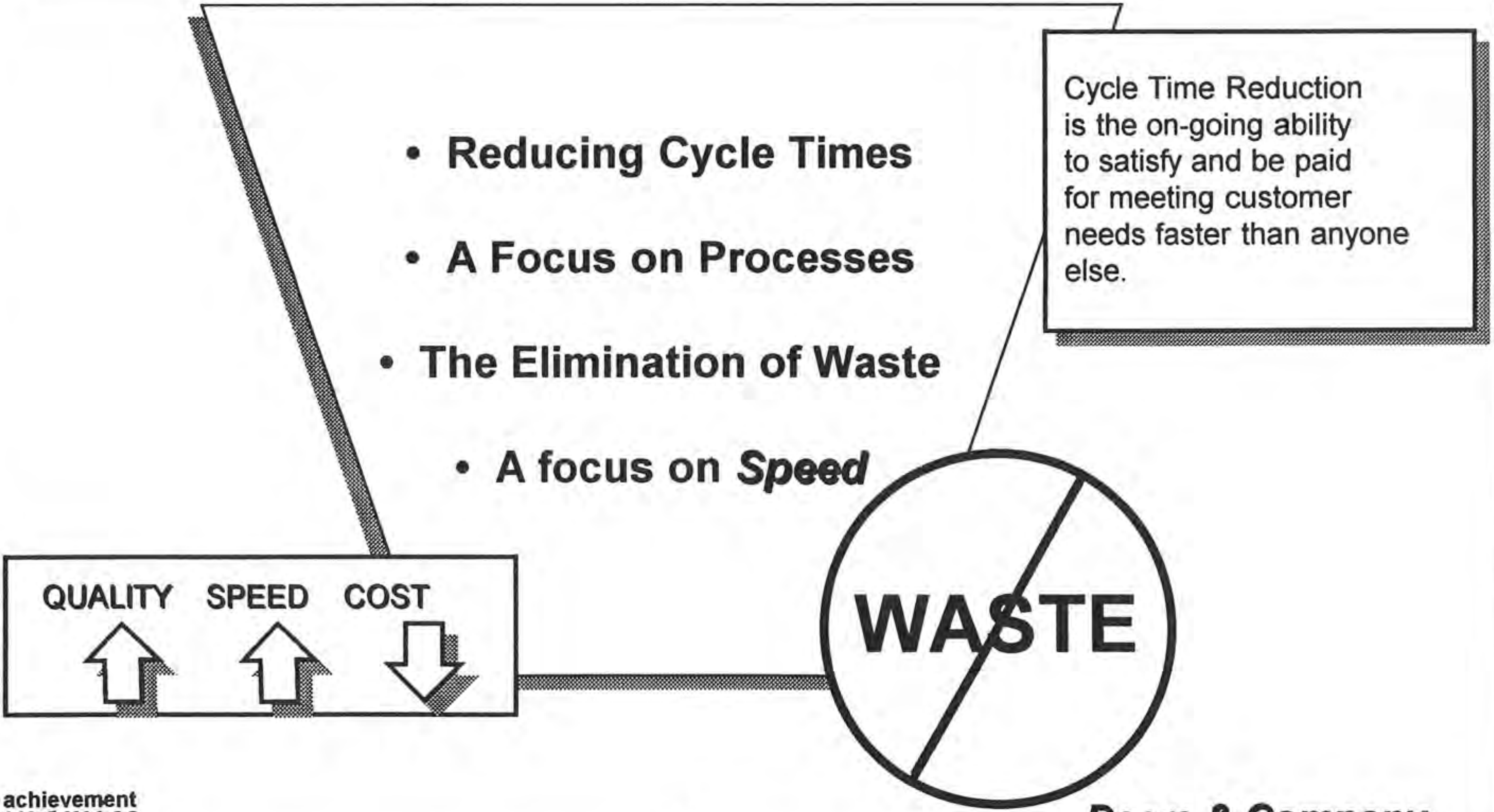
WHAT IS CYCLE TIME REDUCTION?

"SPEED IS LIFE"

The application of the principles and practices of Total Quality to key business processes with the added element of *"SPEED"*



WHAT IS CYCLE TIME REDUCTION?



- Reducing Cycle Times
- A Focus on Processes
- The Elimination of Waste
- A focus on ***Speed***

Cycle Time Reduction is the on-going ability to satisfy and be paid for meeting customer needs faster than anyone else.

QUALITY ↑ SPEED ↑ COST ↓

To identify waste, ask yourself the following questions:

- **If this particular process activity is eliminated or minimized, will the quality of the output suffer?**
- **As a customer, am I willing to pay for this particular activity? Is it of value to me?**

WASTE

Anything other than the minimum amount of manpower, materials and machinery required to add value to a product or service

WORK EFFICIENCY

Work efficiency is the mathematical expression of the amount of work (value-added) as opposed to waste--in a process.

$$\frac{\text{WORK}}{\text{WORK + WASTE}} \times 100\%$$

ACTIVITY	TIME	WORK	WASTE
Repair imaging equipment	90		
Walk to service van	12		
Search for needed information	6		
Walk back to job	12		
Repair imaging equipment	75		
Walk to service van	12		
Search for needed information	6		
Walk back to van	12		
Repair imaging equipment	75		

Work Efficiency:

$$\frac{\qquad}{\quad + \quad} \text{ X } 100\% =$$

Process improvement can result in:

- More work being accomplished in the same time with fewer resources.
- The same amount of work being accomplished in less time with fewer resources.

WHAT CTR IS NOT

WORKING LONGER HOURS

ADDING RESOURCES TO THE PROCESS

WORKING HARDER

RUSHING THE PROCESS

CYCLE TIME-- ***"The time taken for the transformation from input to final output."***

THE PRIMARY OBJECTIVES OF CTR

- MAKING PROCESSES EFFECTIVE--producing desired results.
- MAKING PROCESSES EFFICIENT--minimizing the resources used.
- MAKING PROCESSES ADAPTABLE--flexibility and ability to adapt to changing customer and business needs.

"We need a business process that is worthy of respect and is respected. This means a process that can handle today's values and complexities accurately and efficiently--one that is positioned for the future and, therefore, can move ahead with the business, not struggle behind as it has been doing."

---John P. Opel
Past Chairman, IBM

THE DEVELOPMENT OF BUSINESS PROCESSES THAT:

- ELIMINATE ERRORS
- MINIMIZE DELAYS
- MAXIMIZE USE OF ASSETS
- PROMOTE UNDERSTANDING
- ARE EASY TO USE

- ARE CUSTOMER FRIENDLY
- ARE ADAPTABLE TO CHANGING CUSTOMER AND BUSINESS NEEDS
- PROVIDE A COMPETITIVE ADVANTAGE
- REDUCE EXCESS RESOURCES

WHY CYCLE TIME REDUCTION?

- Enables Company to Focus on Customer.
- Can Better Predict and Control Change.
- Competitive Advantage by Improving the Use of Available Resources.
- Effect Major Changes in Complex Activities in a Rapid Manner.
- Effectively Manage Interrelationships.
- Provides a Systematic View of Organization Activities.
- Maintains Focus on Process.
- Prevents Errors.
- Provides a Measure of Poor Quality Cost (Waste).

WHY CYCLE TIME REDUCTION?

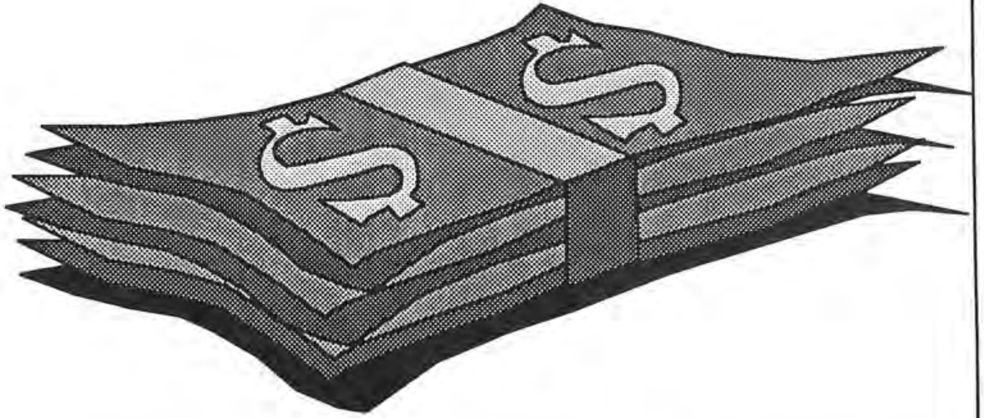
(continued)

- ◎ Develops Complete Measurement Systems for Defects and Corrective Activity.
- ◎ Helps the People Understand How Input Becomes Output.
- ◎ Helps the People Understand How Good the Company Can Be and How to Get There.
- ◎ A Method to Prepare a Company to Meet It's Future Challenges.

Impact of *Speed* on Cost

- Reduced Cycle Times =
  - Fewer Resources Required
  - Elimination of Waste
  - Reduction in the Cost of Quality
    - *Failure*
    - *Detection*
    - *Prevention*

Reduced Cycle Times =

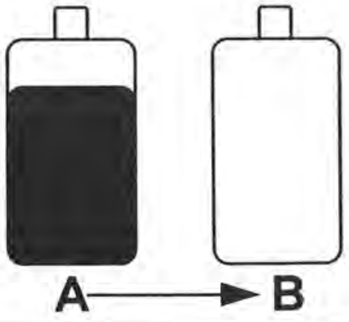


What Drives *Speed* ??

Instructions

How fast can you get the contents of Bottle A into Bottle B?

1. Develop a process.
2. Implement and time your process.
3. Revise process.
4. Try it again and time it.

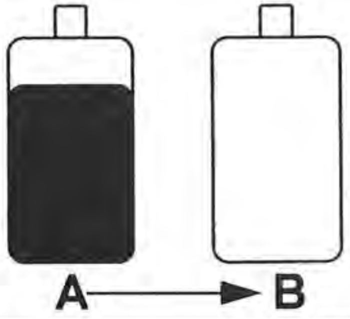


What Drives *Speed* ??

Review

What did you learn about improving *Speed*?

How was this demonstration similar to what we often do on the job?

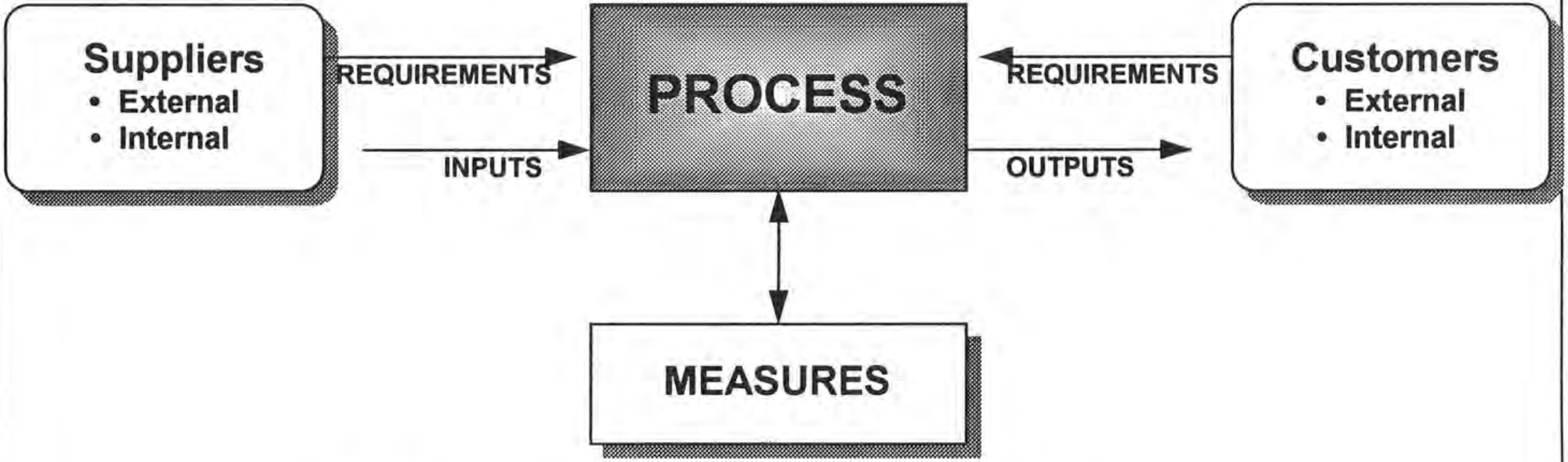


PROCESS FOCUS

TRADITIONAL FOCUS	PROCESS FOCUS
Employees are the problem	Process is the problem
Employees	People
Doing my job	Helping to get things done
Understanding my job	How my job fits in total process
Measure individuals	Measure processes
Change the person	Change the process
Can find a better employee	Can always improve the process
Motivate people	Remove barriers
Control employees	Develop people
Distrust	We are in it together
Who made the error	What allowed the error to occur
Correct errors	Reduce variation
Bottom-line driven	Customer driven

WHAT IS A PROCESS?

"There is no service or product without a process, likewise there is no process without a product or service."



Suppliers
- External
- Internal

REQUIREMENTS

INPUTS

PROCESS

REQUIREMENTS

OUTPUTS

Customers
- External
- Internal

MEASURES

☑ **A workflow exists that can be charted.**

☑ **Has a history that can be analyzed.**

☑ **Can be measured by: cost, quality, and cycle time.**

PROCESS CLARIFICATION

PRODUCTION PROCESS--Any process that comes into physical contact with the hardware or software that will be delivered to an external customer. It does not include the shipping and distribution process.

BUSINESS PROCESS--All service processes and processes that support production processes. A business process consists of a group of logically related tasks that use the resources of the organization to provide results in support of the organizational objectives.

"Processes that are left unregulated will change, but the change will be for the convenience of the people in the process rather than the best interest of the company or the customer."

H. James Harrington

PROCESS CLARIFICATION

VALUE DRIVEN--A process that directly delivers the value defined in the company's mission and strategy to the customer. (ie: product development, order fulfillment, customer service)

SUPPORT PROCESS--The traditional activities that are currently required to support the value driven processes but do not directly add value themselves. (ie: test lab, human resources, finance)

ATTRIBUTES OF A WELL MANAGED PROCESS

- A Process Owner
- Well Defined Boundaries
- Well Defined Internal Interfaces and Responsibilities
- Documented Procedures, Work Tasks, and Training Requirements
- Measurements and Feedback Controls Close to the Point of Activity
- Customer Related Measurements and Targets
- Know Cycle Times
- Know How Good They Can Be

The Value of *Speed*

Customers Demand Speed and Flexibility

Significantly Reduced Costs to do Business

Customer Retention--5 to 1 ratio

Minimize Customer Defects

Maximum Use of Assets

Due Date Integrity

A Competitive Advantage

It's Easy

Simplify the process and compress cycle times.

CORNERSTONE TOOLS TO *SPEED*

- **Eliminate Bureaucracy**
- **Eliminate Duplication**
- **Value-Added Assessment**
- **Simplification**
- **Cycle Time Reduction**
- **Error Proofing**

- **Simplicity***
- **Standardization**
- **Supplier Partnership**
- **Upgrading**
- **Automation/Mechanization**

* DOCUMENT	NO. OF WORDS
Lords Prayer	57
Ten Commandments	71
Gettysburg Address	246
Declaration of Independence	300
U.S. Government Contractor Management Evaluation	38,000

CTR DEPLOYMENT OVERVIEW
THE APPLICATION OF *SPEED*

TQM/CTR

- Total quality awareness training
- Improvement related to selected problems

CTR
PLANNING WORKSHOP

- CTR understanding
- Cycle time reduction goals & opportunities
- CTR deployment and management plan
- Process selection and charters

CTR
IMPLEMENTATION WORKSHOP

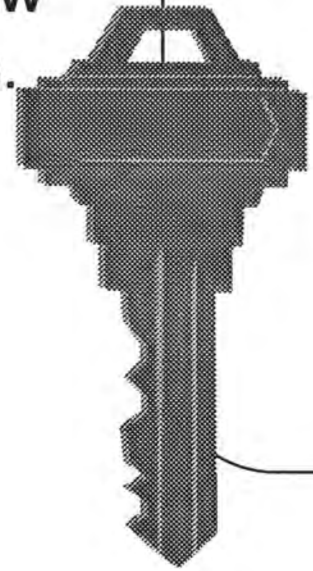
- CTR understanding
- Process map, baseline performance & entitlement
- Identify barriers to speed
- Action plan for improvement

CTR
TEAM EFFORT

- Specific causes of non value-added process time
- Recommendations for cycle time reduction
- Action plan for implementation
- Faster, more efficient/effective process operation

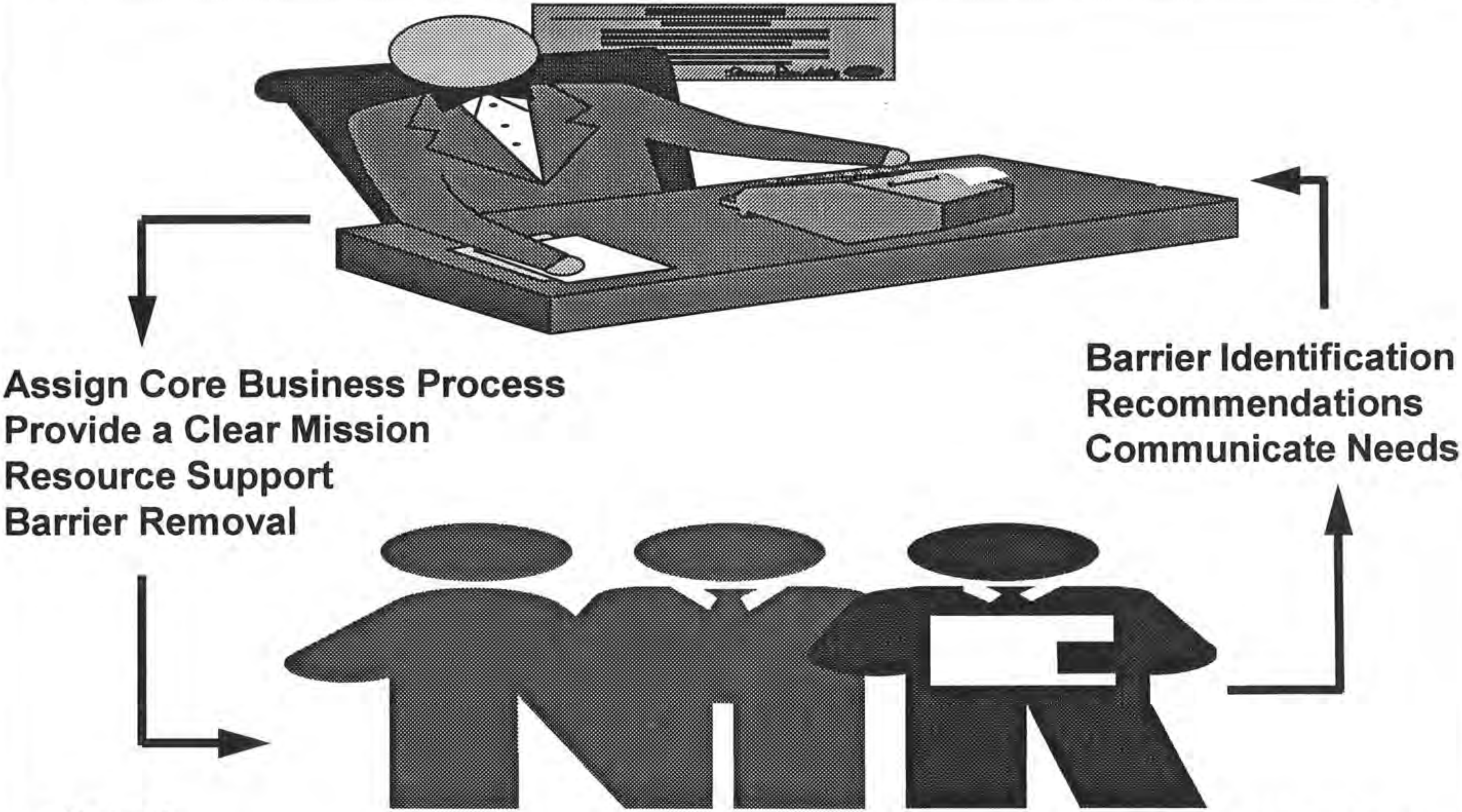
Managing CTR Deployment

A sustainable CTR capability can be achieved only by learning faster, not by working harder. The rate of knowledge productivity is limited by how fast the organization learns.



- **STEERING COMMITTEE**
- **PROCESS MANAGERS**
- **CTR TEAMS**
- **FACILITATION**
- **CHAMPIONS**

The *CTR CHAMPION*



Assign Core Business Process
Provide a Clear Mission
Resource Support
Barrier Removal

Barrier Identification
Recommendations
Communicate Needs

Role of the *Steering* Committee

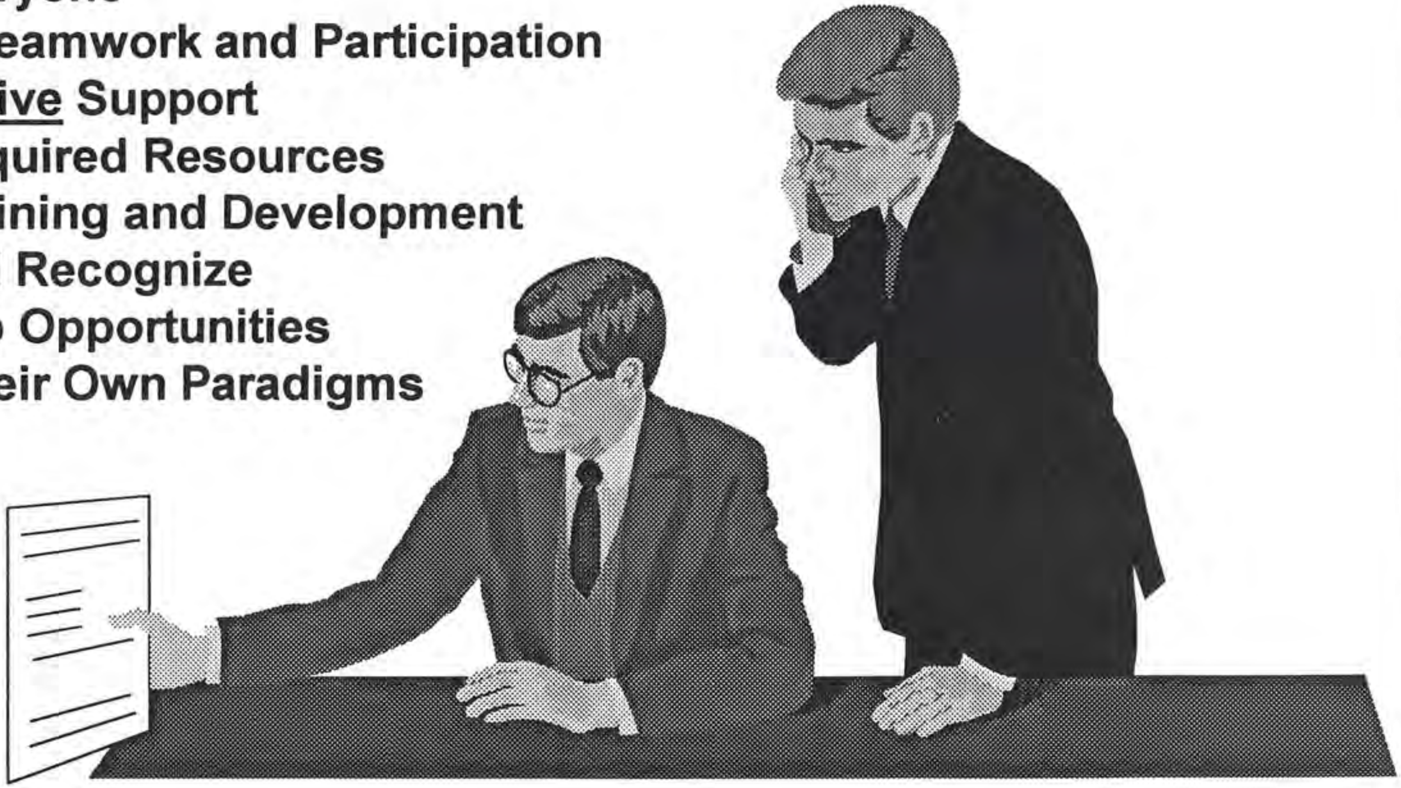
- Communicate Need and Status of CTR
- Register and Coordinate Team Formation
- Eliminate Barriers
- Coordinate Across Teams and Organizational Boundaries
- Develop and Monitor "Global" Measurements
- Evaluate Team Results
- Resolve Conflict
- Reward and Recognize

Role of the *PROCESS MANAGER*

- ☑ Define the Process Boundaries
- ☑ Block Diagram the Process
- ☑ Identify Efficiency Measurements
- ☑ Identify Effectiveness Measurements (customer defects)
- ☑ Form Team
- ☑ Develop Team Charter
- ☑ Guide Team Effort
- ☑ Conduit to Organizational Resources

Leadership's Role in CTR

1. Communicate Goals
2. Ask for Input
3. Involve Everyone
4. Reinforce Teamwork and Participation
5. Provide Active Support
6. Provide Required Resources
7. Provide Training and Development
8. Reward and Recognize
9. Provide Job Opportunities
10. Change Their Own Paradigms



Two Aspects Of *Leadership*

BEHAVIORAL ASPECT

- Positive Work Environment
- Positive Management Style
- Employee Involvement
- Teamwork

CYCLE TIME REDUCTION

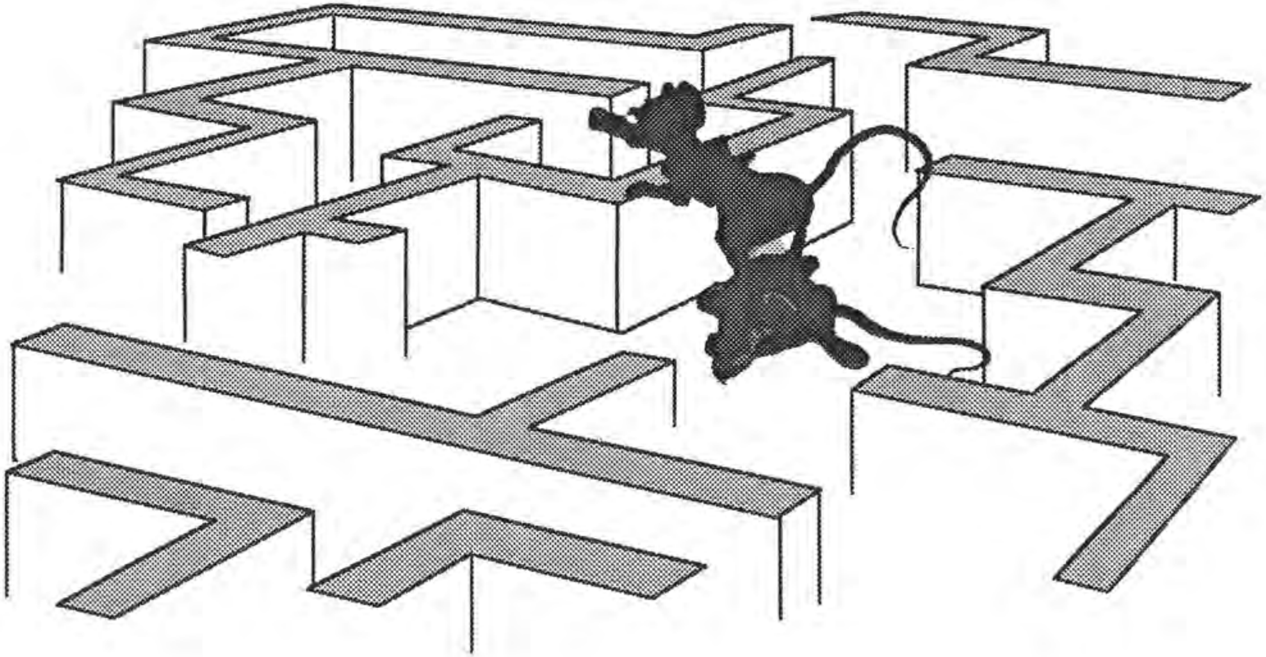
ANALYTICAL ASPECT

- Process Identification
- Process Analysis
- Measurable Process Objectives
- Tools & Techniques for Success

TOTAL CUSTOMER FOCUS

"What's needed to make CTR work".

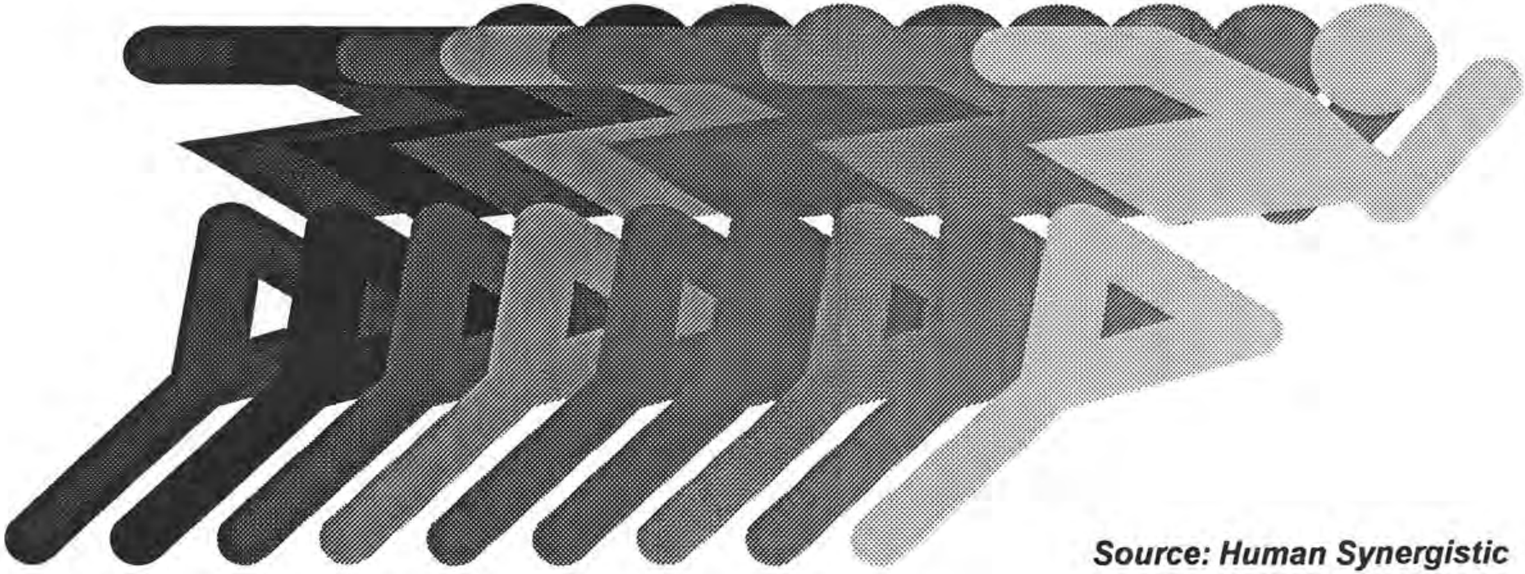
Teamwork and *Speed*



Teams Deserve the Support

In Problem Solving Exercises:

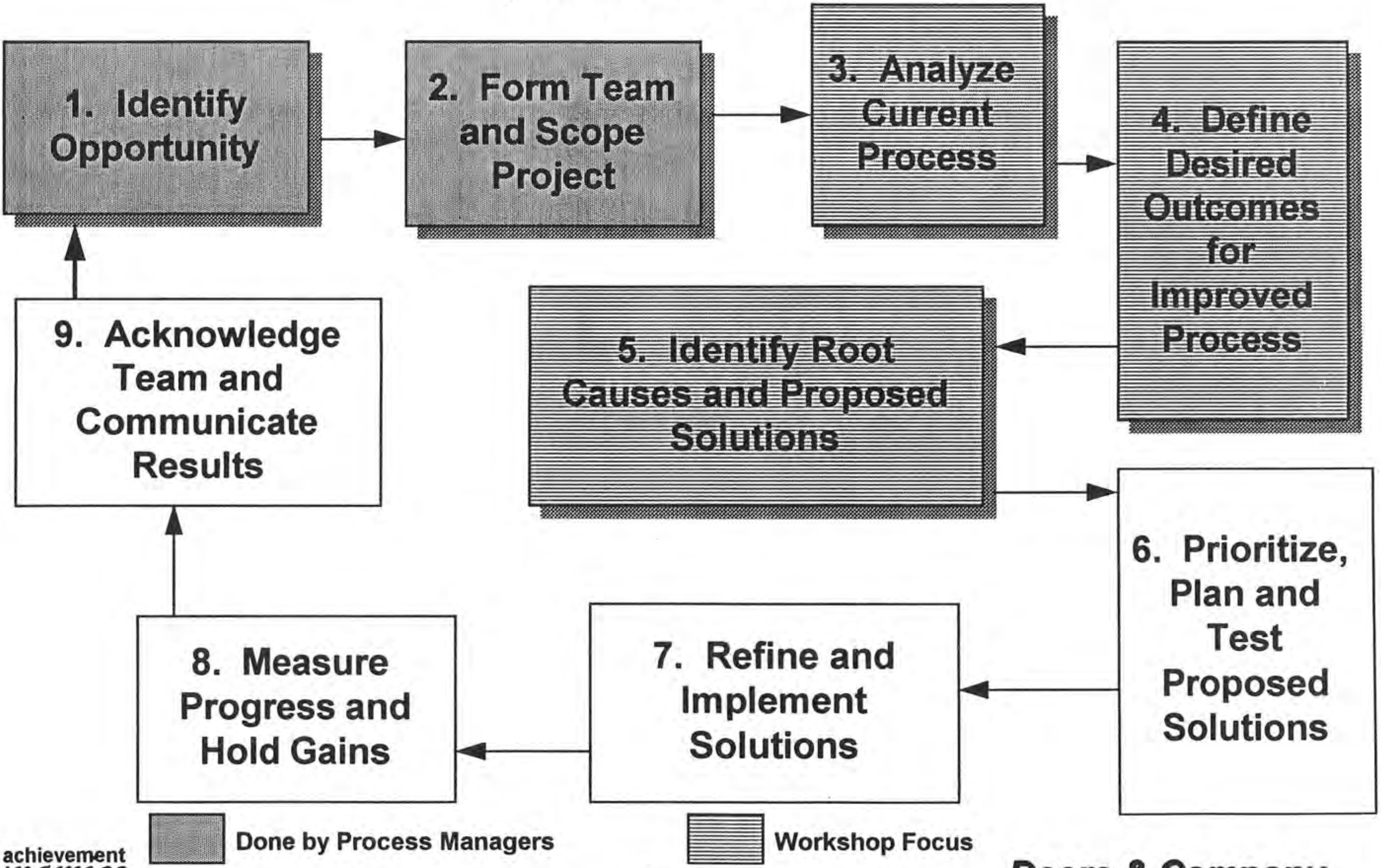
- **57% of teams scored better than the best team member**
- **96% of teams scored better than an average team member**



Source: Human Synergistic

Nine Step Problem Identification and Solving Model

(WORKSHOP FOCUS)



1. Identify Opportunity

2. Form Team and Scope Project

3. Analyze Current Process

4. Define Desired Outcomes for Improved Process

5. Identify Root Causes and Proposed Solutions

6. Prioritize, Plan and Test Proposed Solutions

7. Refine and Implement Solutions

8. Measure Progress and Hold Gains

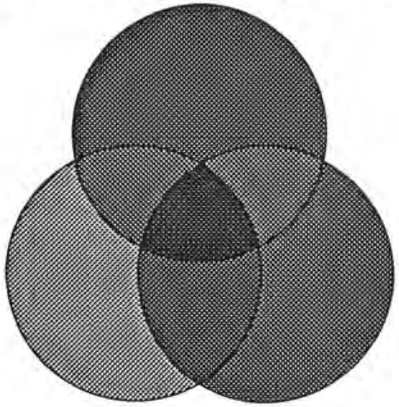
9. Acknowledge Team and Communicate Results

▨ Done by Process Managers

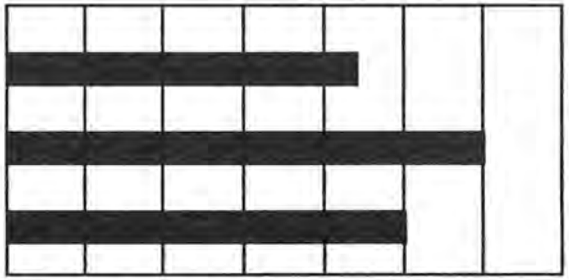
▤ Workshop Focus

Steps One and Two--Deliverables:

1. Identify Opportunities



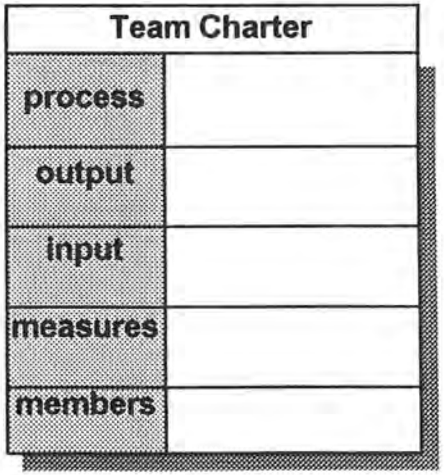
Target
Core
Business
Processes



Establish
Deployment
Plan

2. Form Teams and Scope Project

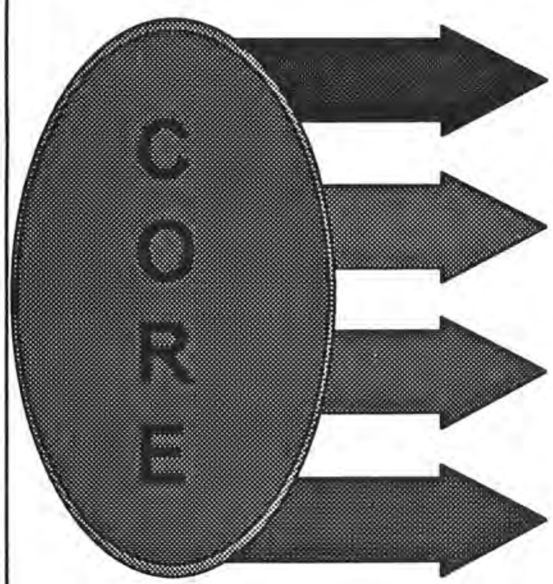
Team Champion
Team Charter



Team Charter	
process	
output	
input	
measures	
members	

"CORE" Business Processes

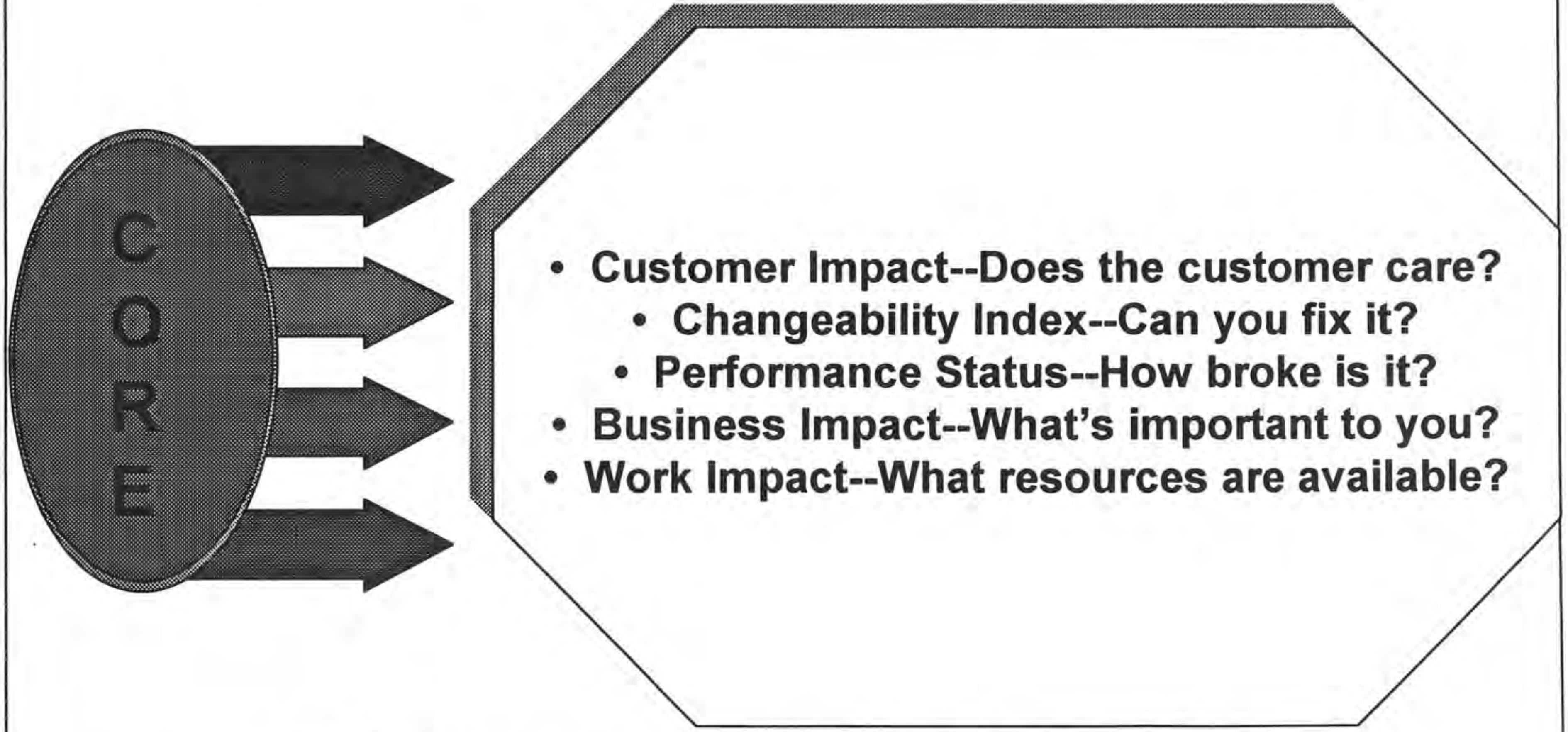
CRITERIA



- Linked to External Customers
- External and/or Internal Customer Problems and/or Complaints
- High Cost Procedures
- If Improved, Provides Competitive Advantage
- Cross Functional Processes
- Long Cycle Times
- There is a Better Way (ie: Benchmarking)
- Inherent Basis of Company's Competitive Position

"CORE" Business Processes

CRITERIA



- **Customer Impact--Does the customer care?**
- **Changeability Index--Can you fix it?**
- **Performance Status--How broke is it?**
- **Business Impact--What's important to you?**
- **Work Impact--What resources are available?**

"What's important to your business--Cannot be done by others"

"CORE" Business Candidates

- DEVELOPMENT
- FINANCIAL ACCOUNTING
- INFORMATION SYSTEMS
- PURCHASING
- PROGRAMMING
- CUSTOMER SERVICE

- DISTRIBUTION
- FINANCIAL PLANNING
- PRODUCTION CONTROL
- PERSONNEL
- QUALITY

Sub-Process Candidates

Why Use a Team Charter?

- ⇨Clarifies Expectations
- ⇨Identifies Deliverables
- ⇨Promotes Team Ownership
- ⇨Promotes Cooperation
- ⇨Accelerates Understanding
- ⇨Minimizes Problems
- ⇨"Fast Track" Start
- ⇨Adds ***Speed*** to the Team Process

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Team Charter Assessment

Key Issue	Concerns	Suggested Action
Process Scope		
Goals/Objectives		
Team Membership		
Measurements		
Resources (Time, money, equipment)		
Other issues (customers/suppliers)		

MEASUREMENTS ARE CRITICAL TO:

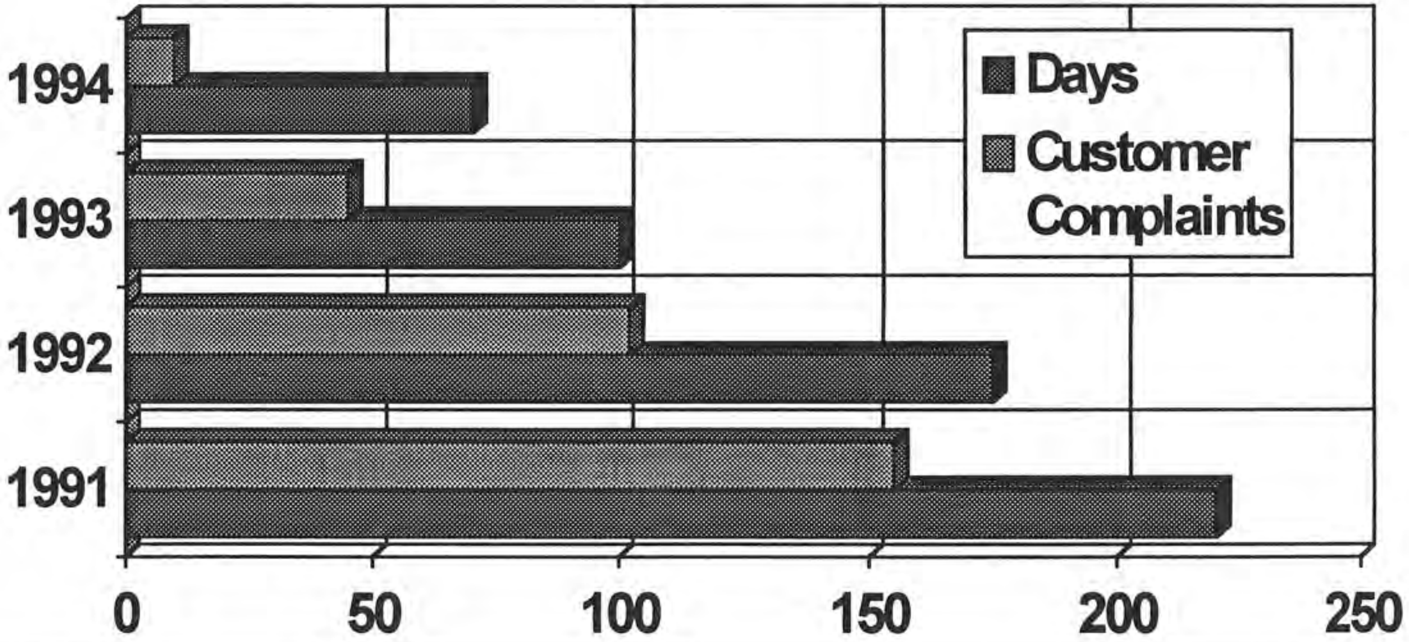
- Understanding what's occurring
- Evaluating the need for change
- Evaluating the impact of change
- Ensuring that gains are not lost
- Correcting out-of-control conditions

- Setting priorities
- Deciding when to increase responsibilities
- Deciding when to provide additional training
- Planning for meeting new customer expectations
- Realistic scheduling

"If you cannot measure it, you cannot control it, and if you cannot control it, you can't manage it."

Clarifying Your Measurements for Cycle Time Reduction

Process Effectiveness/Effficiency



The fundamental reason we measure anything in an organization is to change behavior. If there are measures currently that can vary dramatically without causing anyone to change, they should be eliminated.

PROCESS EFFECTIVENESS

(QUALITY)

- EFFECTIVENESS--The extent to which the outputs of the process or sub-process meets the needs and expectations of its customers.

- Effectiveness measures might be:

  -Customer Complaints
  -Warranty Costs
  -Rework
  -Due Date Integrity

  -Market Share
  -Backlog
  -Reject
  -Unacceptable Product or Service

Process effectiveness is how well the process meets the requirements of its end customer.

PROCESS EFFICIENCY

(PRODUCTIVITY)

- EFFICIENCY--The extent to which resources are minimized and waste is eliminated in the pursuit of effectiveness.

- Efficiency measures might be:

  -Cycle Time Per Unit/Transaction
  -Resources Per Unit of Output
  -Value-Added Cost Per Unit
  -Non Value-Added Per Unit
  -Cost of Poor Quality

Process effectiveness is primarily for the benefit of the customer, but process efficiency is primarily for the benefit of the process owner.

WORK EFFICIENCY

Work efficiency is the mathematical expression of the amount of work (value-added) as opposed to waste--in a process.

$$\frac{\text{WORK}}{\text{WORK + WASTE}} \times 100\%$$

ACTIVITY	TIME	WORK	WASTE
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Work Efficiency:

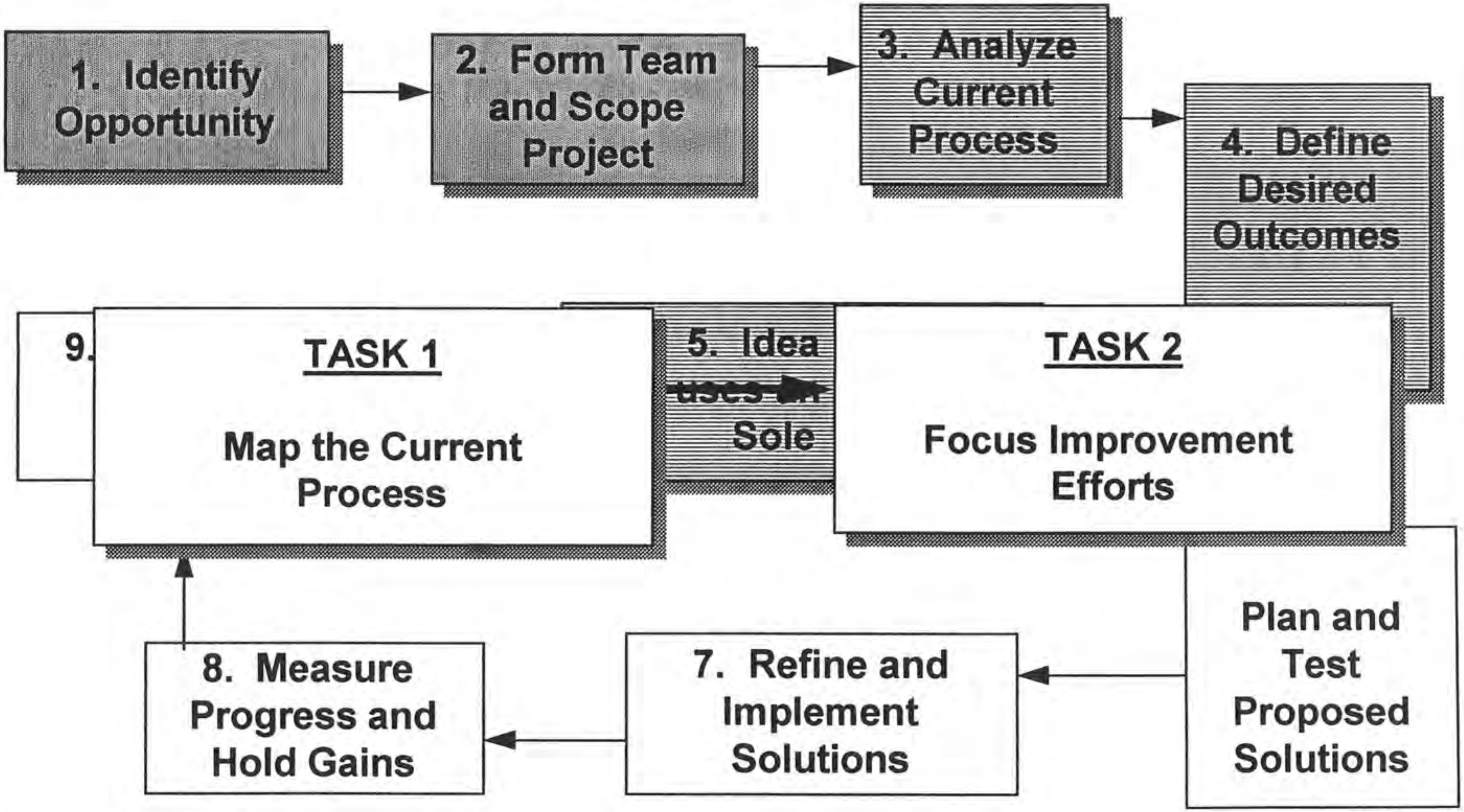
$$\frac{\qquad}{\quad + \quad} \text{ X } 100\% =$$

Process improvement can result in:

- More work being accomplished in the same time with fewer resources.
- The same amount of work being accomplished in less time with fewer resources.

Step 3. Analyzing the Current Process

(WORKSHOP FOCUS)



1. Identify Opportunity
2. Form Team and Scope Project
3. Analyze Current Process
4. Define Desired Outcomes
9.
TASK 1
Map the Current Process
5. Idea
uses an
Sole
TASK 2
Focus Improvement Efforts
Plan and Test Proposed Solutions
7. Refine and Implement Solutions
8. Measure Progress and Hold Gains

▨ Done by Process Managers

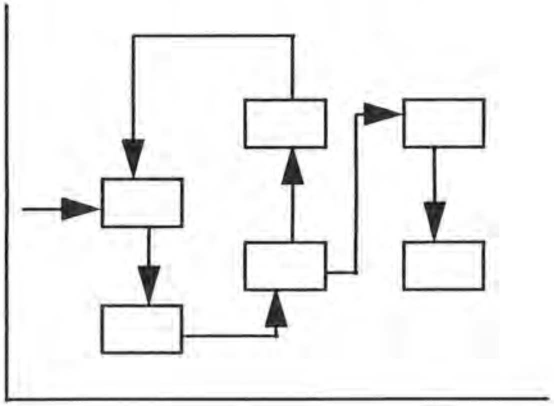
▤ Workshop Focus

StepThree--Deliverables

Task 1. Analyze the current process

Process Maps

- Top Down Map
- Wall Map
- Product Map



Task 2.Identification of Improvement Opportunities

Step 3, Task 1: Process Mapping--Top Down Flow Chart

INSTRUCTIONS

- Look at the example below of a top-down flowchart

Suppliers	Take Order	Make Pizza	Box & Hold	Deliver Pizza	Customers
•X Wholesale Warehouse •Y Carton Supply	•Answer Phone •Write Order •Post Order to Kitchen	•Prepare Crust •Spread Sauce •Add Ingredients •Bake Pizza	•Secure Box •Cut Pizza •Box Pizza •Hot Rack or Delivery Pack	•Verify Order •Check Customer Location •Deliver Pizza	•Residents •Businesses

Build a top-down flowchart of your process.

- Identify 4-6 major phases of your process
- For each phase, list the major activities in the order they occur.
- Identify suppliers.
- Identify customers.

Estimate the average time it takes to complete each phase.

List the times on the flow chart.

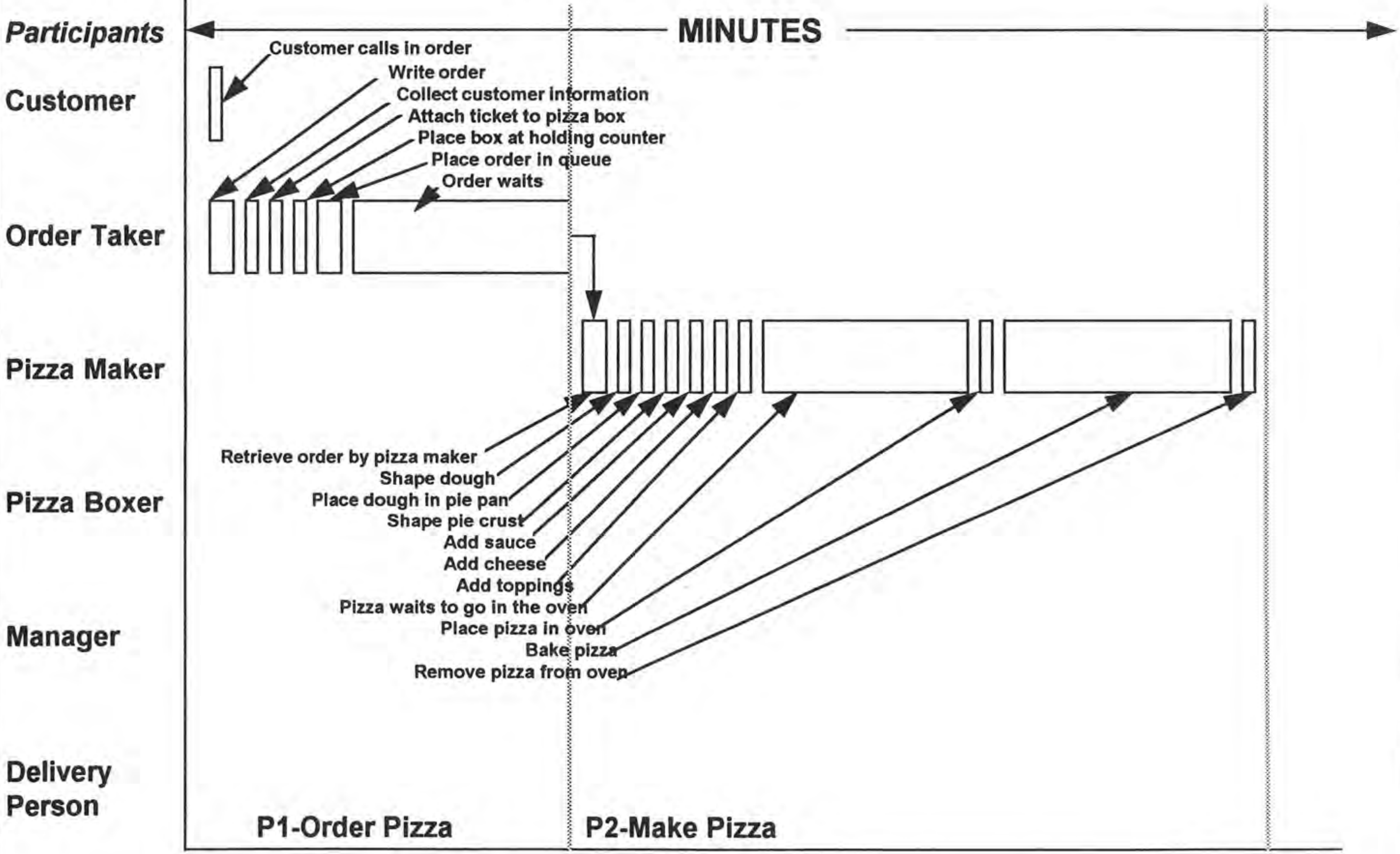
Step 3, Task 1: Activity Based Mapping
(Wall Mapping)

INSTRUCTIONS

1. Study the example of a process map on the following pages.

In an activity based process map, you are "one"with the participants.

Wall Mapping



Participants

MINUTES

Customer

Order Taker

Pizza Maker

Pizza Boxer

Manager

Delivery Person

Customer calls in order

Write order

Collect customer information

Attach ticket to pizza box

Place box at holding counter

Place order in queue

Order waits

Retrieve order by pizza maker

Shape dough

Place dough in pie pan

Shape pie crust

Add sauce

Add cheese

Add toppings

Pizza waits to go in the oven

Place pizza in oven

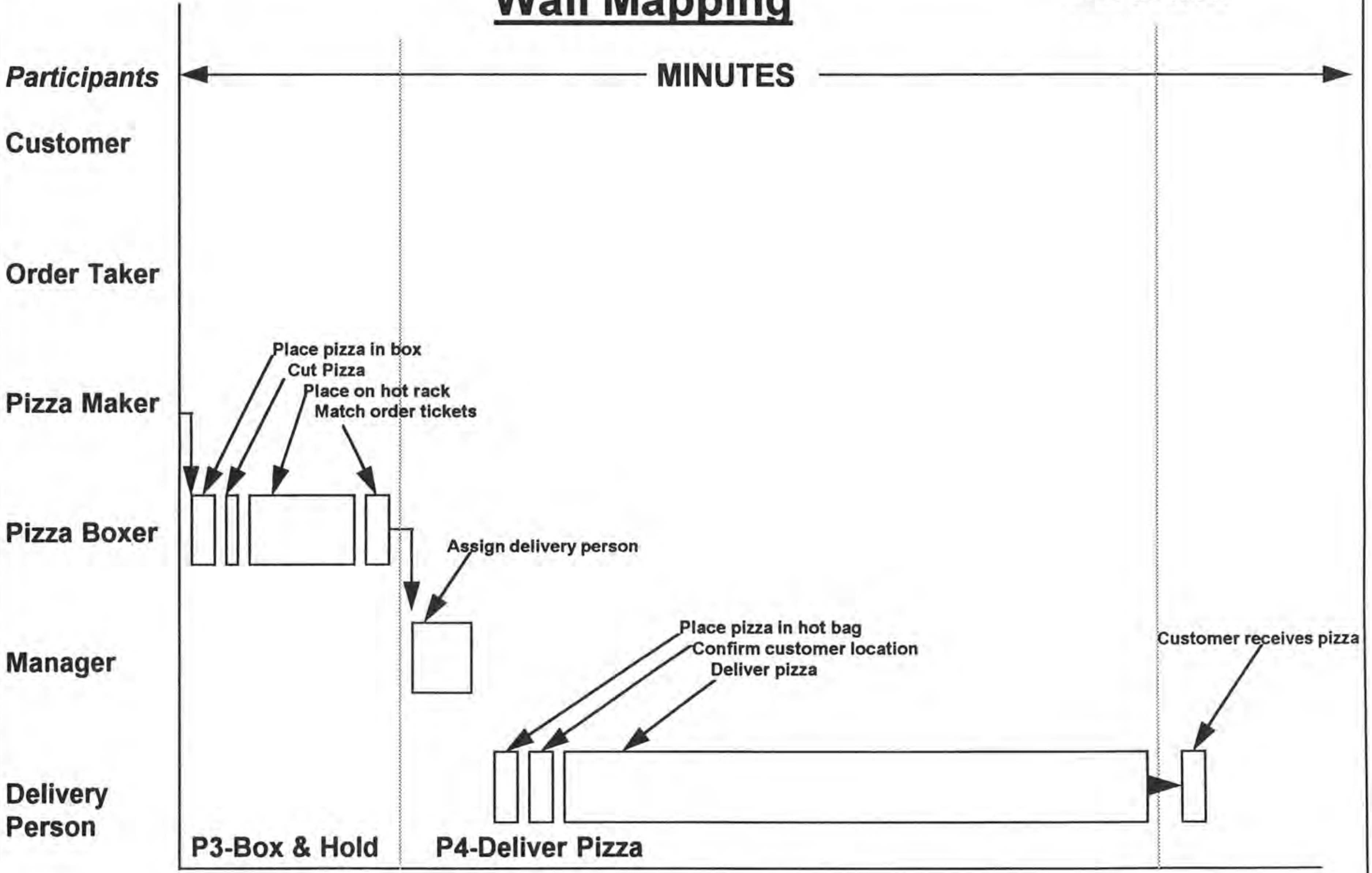
Bake pizza

Remove pizza from oven

P1-Order Pizza

P2-Make Pizza

Wall Mapping



GOAL: "Streamline the paperwork process so that we have a system that allow MANMAN inventory records to be as real time as possible while maintaining or improving data integrity.

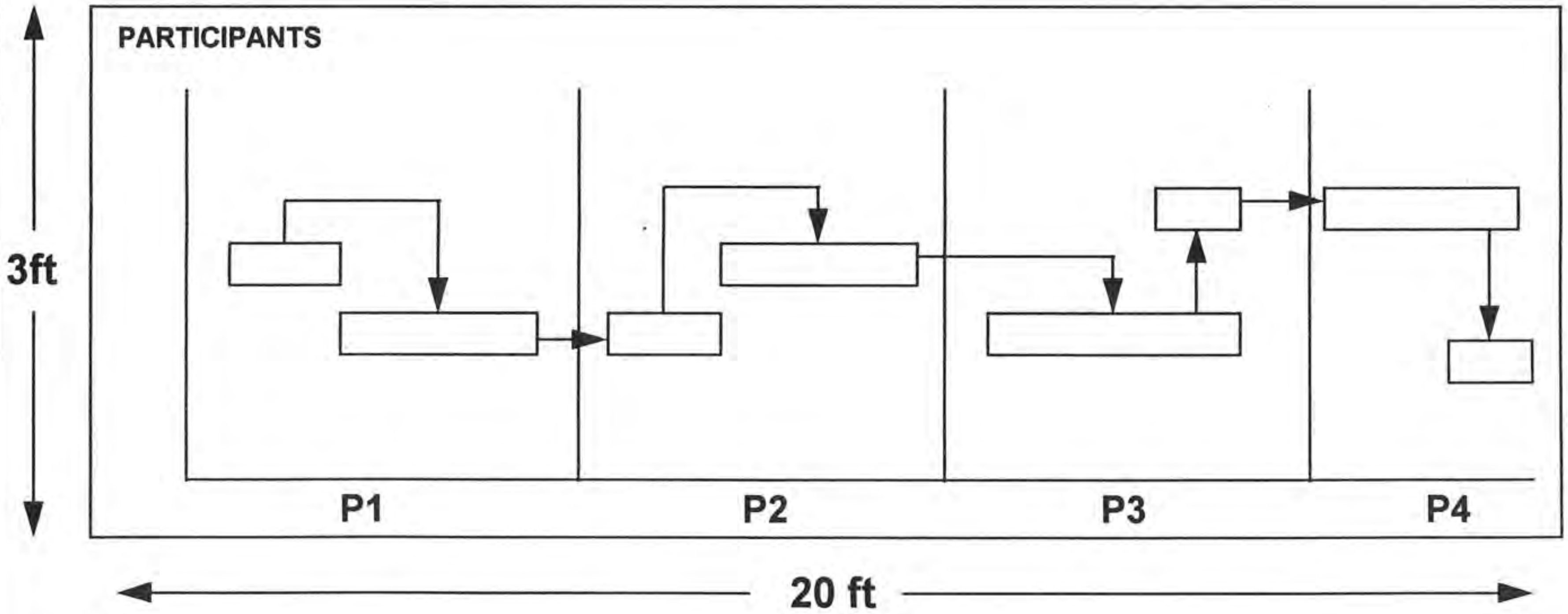
Phase One	Phase Two	Phase Three
REC/INSP	STORES	PLASTICS
HI-LO DRIVER -unloads trucks -verifies packing slips -ID's product after received -moves product from RCV to ST1 after received & inspected	DISPATCHER -loads pull tickets into manman -coordinates storekeepers	UTILITY HI-LO -transports material from stores to point of use -transports produced parts from point of production to scale or dept. storage
RECEIVING CLERK -matches packing slip to P.O. -enters receipt into manman by P.O. -schedules dock appointments -maintains files	STOREKEEPERS -inputs stock into store locations -picks stock from location for other depts.	ASSEMBLER -assembles and ID's parts
INSPECTOR accepts or rejects parts	SCALE OPERATOR -weight counts and backflushes all internally produced/ assembled parts returned from WIP	
1 hour 29 min.	11 hours 33 min.	62 hours 2 min.

Phase Four	Phase Five	Phase Six
SUB-ASSEMBLY	FINAL ASSEMBLY	PALLETIZER
LUGGER -transports between depts. -delivers assembled parts to scale if going to stores ASSEMBLER -assembles and ID's parts	HI-LO DRIVER -transports parts from stores/ depts. storage to lines -turns in move tickets to data entry to be entered LUGGER -visually checks need for parts at line -delivers pull tickets from mfg. office to stores DATA ENTRY -enters move tickets and backflushes -generates pull tickets	HI-LO DRIVER -enters each skid of finished product into manman creating an ID label -labels each skid -loads skids on trucks -at end of shift prints manman palletizers report for production totals -calls dates entry with palletizers report info. -backflush is entered
17 hours 15 min.	19 hours 17 min.	23 min.

(TOTAL: 112 hours 1 min or 4 days 16 hours and 1 min.)

ACTIVITY BASED MAPPING FOR CTR

WALL MAPPING



- Tape a large piece of chart paper to a wall.
- Draw and label the lines on the chart. Put the process name at the top.
- Determine the scale for mapping the time of reach phase. For example, 1 day equals one sticky.
- Divide the horizontal lines into phases.

Step 3, Task 1: Product Mapping

Process: ______________________________

Map Begins: ______________________________
Map Ends: ______________________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
∇ STORAGES		

						Distance	Time	Notes
1.	○	⇨	☐	D	∇			
2.	○	⇨	☐	D	∇			
3.	○	⇨	☐	D	∇			
4.	○	⇨	☐	D	∇			
5.	○	⇨	☐	D	∇			
6.	○	⇨	☐	D	∇			
7.	○	⇨	☐	D	∇			
8.	○	⇨	☐	D	∇			
9.	○	⇨	☐	D	∇			
10.	○	⇨	☐	D	∇			
11.	○	⇨	☐	D	∇			
12.	○	⇨	☐	D	∇			
13.	○	⇨	☐	D	∇			
14.	○	⇨	☐	D	∇			
15.	○	⇨	☐	D	∇			
16.	○	⇨	☐	D	∇			

In a product process map, you are "one" with the product

Step 3, Task 1: Product Mapping

Process: Pizza Delivery

Map Begins: Order Placed

Map Ends: Pizza Delivered

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS	9	10
⇨ TRANSPORTATION	6	22
☐ INSPECTIONS	1	2
D WAIT	4	26
∇ STORAGES		

						Distance	Time	Notes
1. Order Placed	○	⇨	☐	D	∇		30s	
2. Wait for action	○	⇨	☐	D	∇		12m	
3. Dough Shaped	○	⇨	☐	D	∇		30s	
4. Dough spread into pie pan	○	⇨	☐	D	∇		30s	
5. Pie crust shaped	○	⇨	☐	D	∇		30s	
6. Sauce added	○	⇨	☐	D	∇		30s	
7. Cheese added	○	⇨	☐	D	∇		30s	
8. Toppings added	○	⇨	☐	D	∇		30s	
9. Wait for baking	○	⇨	☐	D	∇		8m	
10. Placed in oven	○	⇨	☐	D	∇		30s	
11. Baked	○	⇨	☐	D	∇		6m	
12. Removed from oven	○	⇨	☐	D	∇		30s	
13. Placed in box	○	⇨	☐	D	∇		1m	
14. Cut into slices	○	⇨	☐	D	∇		30s	
15. Inspected for quality	○	⇨	☐	D	∇		2m	
16. Placed on hot rack	○	⇨	☐	D	∇		2m	

Step 3, Task 1: Product Mapping

Process: ____________________

Map Begins: ____________________
Map Ends: ____________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
∇ STORAGES		

						Distance	Time	Notes
17. Wait for delivery	○	⇨	☐	D	∇		5m	
18. Placed in hot bag	○	⇨	☐	D	∇		1m	
19. Wait for transport	○	⇨	☐	D	∇		1m	
20. Transported to customer	○	⇨	☐	D	∇		17m	
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			

Step 3, Task 1: Product Mapping

Process: Double Action Sweeper Assembly

Map Begins: Top picked up

Map Ends: Loaded into master carton

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS	14	
⇨ TRANSPORTATION	21	
☐ INSPECTIONS	2	
D WAIT	2	
∇ STORAGES	0	

						Distance	Time	Notes
1. top picked up	○	⇨	☐	D	∇		1 sec	
2. inspected	○	⇨	☐	D	∇		1 sec	
3. date stamped	○	⇨	☐	D	∇		1.5 sec	
4. placed in fixture	○	⇨	☐	D	∇		3 .25 sec	
5. nailed	○	⇨	☐	D	∇		1 sec	
6. put on rack	○	⇨	☐	D	∇		.18 sec	
7. wait for second pick up	○	⇨	☐	D	∇			
8. picked up	○	⇨	☐	D	∇		22 sec	
9. put on internal assembly	○	⇨	☐	D	∇		5 sec	
10. placed on line	○	⇨	☐	D	∇		5 sec	
11. moved to next station	○	⇨	☐	D	∇		40 sec	
12. picked up and riveted	○	⇨	☐	D	∇		11 sec	
13. put on line	○	⇨	☐	D	∇		1 sec	
14. springs installed	○	⇨	☐	D	∇		8 sec	
15. moved to next station	○	⇨	☐	D	∇		40 sec	
16. put on fixture	○	⇨	☐	D	∇		4 sec	

Step 3, Task 1: Product Mapping

Process:____________________________

Map Begins: ______________________

Map Ends: ______________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
∇ STORAGES		

						Distance	Time	Notes
17. wheels/end caps installed	○	⇨	☐	D	∇		60 sec	
18. put on line	○	⇨	☐	D	∇		1 sec	
19. moved to next station	○	⇨	☐	D	∇		45 sec	
20. picked up	○	⇨	☐	D	∇		2 sec	
21. riveted	○	⇨	☐	D	∇		27 sec	
22. put on different fixture	○	⇨	☐	D	∇		1 sec	
23. corner brush installed	○	⇨	☐	D	∇		12 sec	
24. put on line	○	⇨	☐	D	∇		1 sec	
25. moved to next station	○	⇨	☐	D	∇		45 sec	
26. put on fixture	○	⇨	☐	D	∇		1 sec	
27. brushes and springs installed	○	⇨	☐	D	∇		44 sec	
28. put on line	○	⇨	☐	D	∇		1 sec	
29. moved to next station	○	⇨	☐	D	∇		14 sec	
30. picked up	○	⇨	☐	D	∇		2 sec	
31. put on fixture	○	⇨	☐	D	∇		1 sec	
32. bands installed	○	⇨	☐	D	∇		32 sec	

Step 3, Task 1: Product Mapping

Process: ____________________

Map Begins: ____________________
Map Ends: ____________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
∇ STORAGES		

						Distance	Time	Notes
33. tested	○	⇨	☐	D	∇		8 sec	
34. inspected	○	⇨	☐	D	∇		8 sec	
35. sprayed and wiped	○	⇨	☐	D	∇		2 sec	
36. moved to next station	○	⇨	☐	D	∇		30 sec	
37. picked up	○	⇨	☐	D	∇		1 sec	
38. put in box	○	⇨	☐	D	∇		1 sec	
39. put in master carton	○	⇨	☐	D	∇		6 sec	
40.	○	⇨	☐	D	∇			
41.	○	⇨	☐	D	∇			
42.	○	⇨	☐	D	∇			
43.	○	⇨	☐	D	∇			
44.	○	⇨	☐	D	∇			
45.	○	⇨	☐	D	∇			
46.	○	⇨	☐	D	∇			
47.	○	⇨	☐	D	∇			
48.	○	⇨	☐	D	∇			

Task 1: Process Mapping

Process: Accounts Payable
Map Begins: Requisition printed and in buyer's hands
Map Ends: Check mailed to supplier

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
∇ STORAGES		

						Distance	Time	Notes
PHASE 1	○	⇨	☐	D	∇			
1. Req. is reviewed.	○	⇨	☐	D	∇		1 min	
2. Req. waits for batch review.	○	⇨	☐	D	∇		120 min	
3. Travel to expediter from buyer.	○	⇨	☐	D	∇		1/2 min	
4. Req. entered into system.	○	⇨	☐	D	∇		1 min	
5. Knock down req. #.	○	⇨	☐	D	∇		??	
6. Req. waits for P.O.'s to print.	○	⇨	☐	D	∇		1440 min	
7. Req. matched to P.O.	○	⇨	☐	D	∇		1/2 min	
8. Wait batch to be matched.	○	⇨	☐	D	∇		30 min	
9. Delivered to buyer (P.O./req.).	○	⇨	☐	D	∇		2 min	
10. Buyer inspects P.O.	○	⇨	☐	D	∇		1/2 min	
11. Buyer signs P.O.	○	⇨	☐	D	∇		1/2 min	
12. Wait to review & sign batch.	○	⇨	☐	D	∇		15 min	
13. Moved back to entry cllerk.	○	⇨	☐	D	∇		1/2 min	
14. File req.	○	⇨	☐	D	∇		1 min	
15. Wait - file all req.	○	⇨	☐	D	∇		60 min	

CYCLE TIME
REDUCTION

Task 1: Process Mapping

Process: ______________________

Map Begins: ______________________
Map Ends: ______________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
∇ STORAGES		

						Distance	Time	Notes
16. Burst & separate P.O.	○	⇨	☐	D	∇		1 min	
17. Burst all P.O.'s - wait.	○	⇨	☐	D	∇		30 min	
18. Green copy sent to requestor.	○	⇨	☐	D	∇		1 min	
19. Yellow filed open order book.	○	⇨	☐	D	∇		1 min	
20. White copy mailed/faxed.	○	⇨	☐	D	∇		1 min	
21. Wait all green copier stuffed.	○	⇨	☐	D	∇		20 min	
22. Wait while file all yellow.	○	⇨	☐	D	∇		120 min	
23. Wait for all white.	○	⇨	☐	D	∇		60 min	
24. Mail or trash white copy.	○	⇨	☐	D	∇		10 sec	
	○	⇨	☐	D	∇			
PHASE 2	○	⇨	☐	D	∇			
1. Packing slip verified.	○	⇨	☐	D	∇		2 min	
2. Wait for other P.S. verified.	○	⇨	☐	D	∇		30 min	
3. Travel to receiving office.	○	⇨	☐	D	∇		1/2 min	
4. Packing slips sorted.	○	⇨	☐	D	∇		1/2 min	
5. Info. entered.	○	⇨	☐	D	∇		1/2 min	

Task 1: Process Mapping

Process: ____________________

Map Begins: ____________________
Map Ends: ____________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
▽ STORAGES		

						Distance	Time	Notes
6. Wait for all P.S. entered.	○	⇨	☐	D	▽		15 min	
7. Wait to be tallied.	○	⇨	☐	D	▽		1 min	
8. Filed in cabinet.	○	⇨	☐	D	▽		1/2 min	
	○	⇨	☐	D	▽			
PHASE 3	○	⇨	☐	D	▽			
1. Travel from mailroom to clerk.	○	⇨	☐	D	▽		120 min	
2. Open/date/stamp/sorted.	○	⇨	☐	D	▽		1/2 min	
3. Wait for all mail.	○	⇨	☐	D	▽		30 min	
4. Travel to A/P desks.	○	⇨	☐	D	▽		1/2 min	
5. A/P sorts & voucher stamps 1.	○	⇨	☐	D	▽		2 sec	
6. Wait for all invoices - stamp.	○	⇨	☐	D	▽		10 min	
	○	⇨	☐	D	▽			
	○	⇨	☐	D	▽			
	○	⇨	☐	D	▽			
	○	⇨	☐	D	▽			
	○	⇨	☐	D	▽			

Task 1: Process Mapping

Process: ______________________

Map Begins: ______________________
Map Ends: ______________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
∇ STORAGES		

						Distance	Time	Notes
PHASE 4	○	⇨	☐	D	∇			
1. Enter invoice.	○	⇨	☐	D	∇		1 min	
2. Wait while enter all invoices.	○	⇨	☐	D	∇		60 min	
3. Invoices to A/P clerk.	○	⇨	☐	D	∇		1/2 min	
4. Invoice filed.	○	⇨	☐	D	∇		1/2 min	
5. Wait for all to be filed.	○	⇨	☐	D	∇		5 min	
6. Wait to investigate problems.	○	⇨	☐	D	∇		1440 m	
7. Investigate problem.	○	⇨	☐	D	∇		5 min	
8. Wait while others investigated.	○	⇨	☐	D	∇		60 min	
9. Write up referral.	○	⇨	☐	D	∇		1 min	
10. Wait while other written.	○	⇨	☐	D	∇		60 min	
11. Copies of invoice at copier.	○	⇨	☐	D	∇		5 min	
12. Sort & staple referral & copy.	○	⇨	☐	D	∇		1 min	
13. Wait all to be stapled.	○	⇨	☐	D	∇		5 min	
14. Original filed.	○	⇨	☐	D	∇		1 min	
15. Wait all originals filed.	○	⇨	☐	D	∇		2 min	

Task 1: Process Mapping

Process: ______________________

Map Begins: ______________________
Map Ends: ______________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
∇ STORAGES		

						Distance	Time	Notes
16. Copy-referral/inv.-mailed.	○	⇨	☐	D	∇		1 min	
17. Travel through mail to buyer.	○	⇨	☐	D	∇		720 min	
18. Taken out envelope to buyer.	○	⇨	☐	D	∇		1 min	
19. Investigated by buyer.	○	⇨	☐	D	∇		10 min	
20. Wait- buyer contacts vendor..	○	⇨	☐	D	∇		5 min	
21. Buyer writes notes on referral	○	⇨	☐	D	∇		1/2 min	
22. Buyer mails to A/P Auditor.	○	⇨	☐	D	∇		1/2 min	
23. Mail travels to A/P Auditor.	○	⇨	☐	D	∇		720 min	
24. Open & sort mail.	○	⇨	☐	D	∇		1 min	
25. Wait for all sort.	○	⇨	☐	D	∇		30 min	
26. Delivered to A/P Auditor.	○	⇨	☐	D	∇		1/2 min	
27. Open & read by A/P Auditor.	○	⇨	☐	D	∇		1 min	
28. Wait all envelopes opened.	○	⇨	☐	D	∇		5 min	
29. Original pulled out/match.	○	⇨	☐	D	∇		1/2 min	
30. Wait for all to be pulled.	○	⇨	☐	D	∇		5 min	
31. Invoice entered.	○	⇨	☐	D	∇		1 min	

Task 1: Process Mapping

Process: ______________________

Map Begins: ______________________
Map Ends: ______________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS		
⇨ TRANSPORTATION		
☐ INSPECTIONS		
D WAIT		
∇ STORAGES		

						Distance	Time	Notes
32. Batch entered.	○	⇨	☐	D	∇		60 min	
33. Move back to A/P Clerk.	○	⇨	☐	D	∇		1/2 min	
34. Filed by A/P Clerk.	○	⇨	☐	D	∇		1/2 min	
35. Wait for all to be filed.	○	⇨	☐	D	∇		5 min	
36. Wait for invoice to be due.	○	⇨	☐	D	∇		7 days	10080 min
	○	⇨	☐	D	∇			
PHASE 5	○	⇨	☐	D	∇			
1. Inv. pulled/match check.	○	⇨	☐	D	∇		1/2 min	
2. Wait for batch pulled/matched	○	⇨	☐	D	∇		360 mir	
3. Checks given to A/P Auditor.	○	⇨	☐	D	∇		1/2 min	
4. Checks for A/P Auditor to Mgr.	○	⇨	☐	D	∇		1/2 min	
5. Checks initialed by Mgr.	○	⇨	☐	D	∇		1/2 min	
6. Wait all checks signed/AP Aud	○	⇨	☐	D	∇		1/2 min	
7. Auditor sorts on priority.	○	⇨	☐	D	∇		1/2 min	
8. Wait all checks sorted.	○	⇨	☐	D	∇		30 min	
9. Transport to A/P Clerk	○	⇨	☐	D	∇		1/2 min	

Task 1: Process Mapping

Process: ____________________

Map Begins: ____________________
Map Ends: ____________________

SUMMARY OF CURRENT PROCESS

Type of Activity	NO.	Total Time
○ OPERATIONS	28	19.78
⇨ TRANSPORTATION	16	1,572.37
☐ INSPECTIONS	5	18.50
D WAIT	35	14,979.00
∇ STORAGES	4	3.50

						Distance	Time	Notes
10. Stuffed in envelope.	○	⇨	☐	D	∇		10 sec	
11. All checks stuffed.	○	⇨	☐	D	∇		25 min	
12. Deface check & invoice.	○	⇨	☐	D	∇		5 sec	
13. All defaced.	○	⇨	☐	D	∇		15 min	
14. Alphabetized & filed.	○	⇨	☐	D	∇		1 min	
15. Wait whole batch alph./filed	○	⇨	☐	D	∇		720 min	
16. Check mailed.	○	⇨	☐	D	∇		1 min	
17. Wait for batch to be mailed.	○	⇨	☐	D	∇		25 min	
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			
	○	⇨	☐	D	∇			

TOTAL VALUE-ADDED -----12.03 min.
12.03 X 3 = 36.09
TOTAL TIME---16,593.45 min.

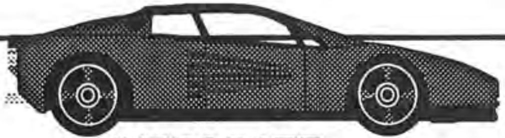
Step 3, Task 2: Focus Improvement Efforts

What is the Cause for Pause?--Analysis of Wall Map

- Which activities do not add value?
- Which activities can be eliminated?
- Which activities can be replaced with a simpler one?
- Where does the process appear to be a long chain of tasks?
- Which key event(s) can start before the one before it has finished?

SIMPLIFY

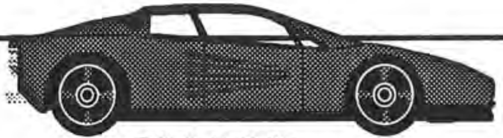
ELIMINATE


INTEGRATE

Step 3, Task 2: Focus Improvement Efforts

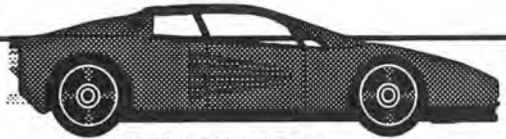
What is the Cause for Pause?--**Analysis of Wall Map**

- Which activities can start sooner than currently indicated?
- Which activities appear to cluster around key functions?
- Where are there activity “hand-offs” between participant?
- Where does the process provide early only or late only involvement for any key participant?
- Where is any participant band less than 1/3 filled?



SIMPLIFY

ELIMINATE



INTEGRATE

Step 3, Task 2: Focus Improvement Efforts

What is the Cause for Pause?--Analysis of Wall Map

- Where are there any activities that are redone?
- Where are loops past the cycle mid-point?
- Where are the loops generally owned by one participants?
- Where do similar tasks appear to be done by more than one participants?
- Where do similar tasks appear to be redone by other functions?

SIMPLIFY

ELIMINATE

INTEGRATE

Step 3, Task 2: Focus Improvement Efforts

What is the Cause for Pause?--Analysis of Product Process Map

- Which activities do not add value? Focus on transports, inspections, waits, and storage.
- Which activities can be eliminated?
- Which activities can be combined?
- Which activities can be replaced with a simpler one?
- How can distances be reduced?

SIMPLIFY

ELIMINATE

INTEGRATE

Step 3, Task 2: Focus Improvement Efforts

What is the Cause for Pause?--Analysis of Product Process Map

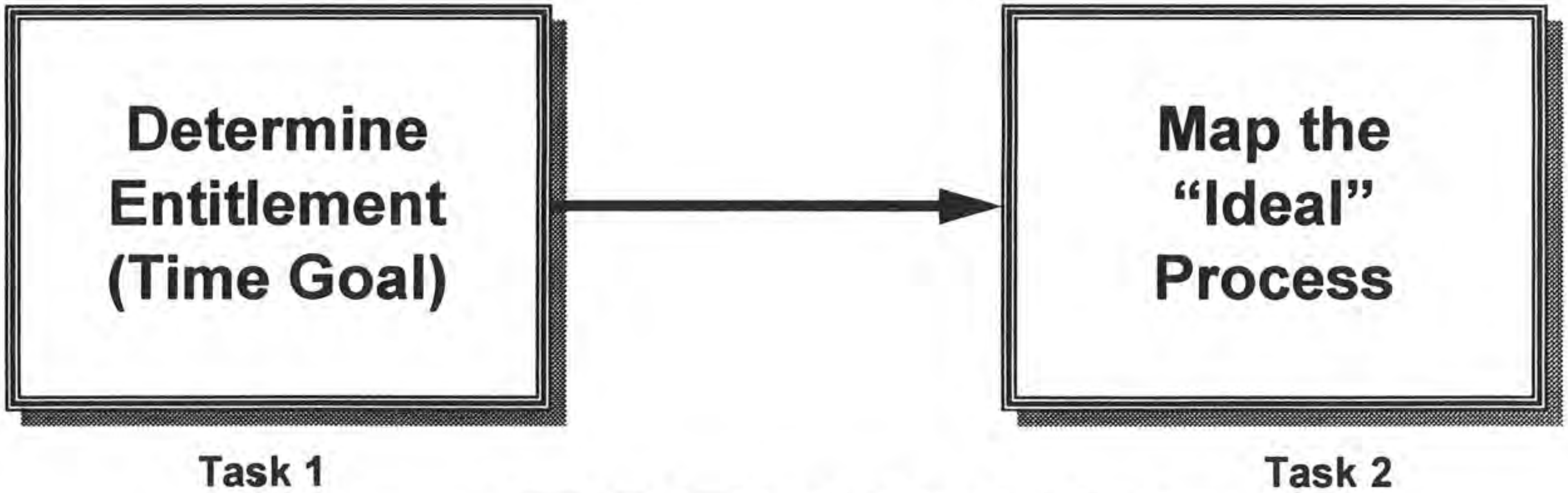
- Where are there redundant activities?
- What is the purpose or function of this activity?
- If the activity can't be eliminated or combined, can it be reduced?

SIMPLIFY

ELIMINATE

INTEGRATE

Defining Desired Outcomes for the Improved Process: Step 4

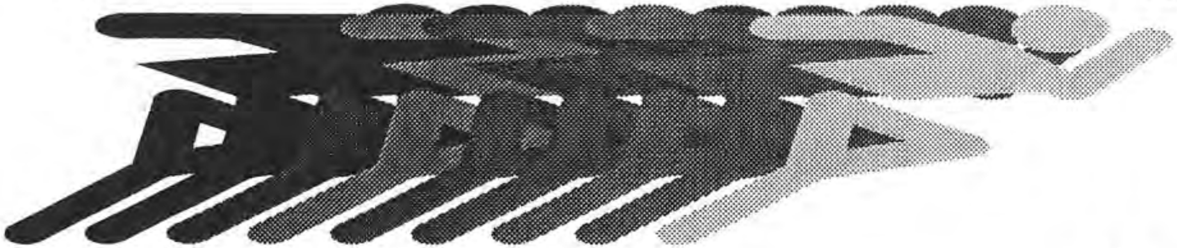


Determine Entitlement (Time Goal)

Task 1

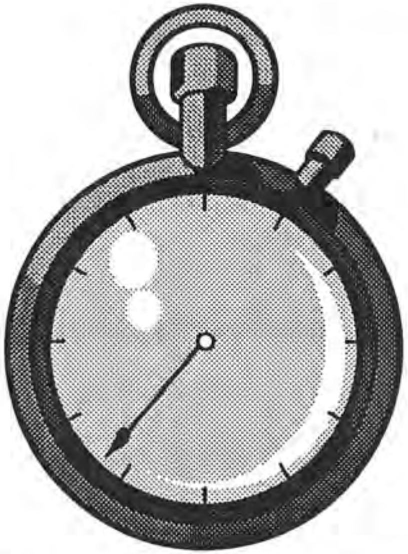
Map the "Ideal" Process

Task 2



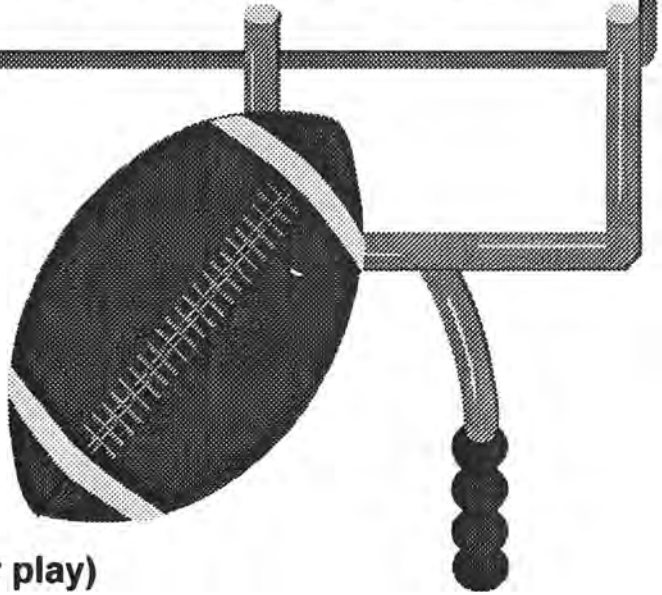
Step Four--Deliverables:

Task 2. "Ideal Map"---Vision of Improved Process



Task 1. Entitlement--CTR Improvement Goal

NON VALUE-ADDED ACTIVITIES



EXAMPLE: FOOTBALL GAME

- **Elapsed Time = 180 Minutes**
- **Regulation Time = 60 Minutes**
- **Active Playing Time = 23 Minutes**
  (valued-added) **(140 plays X 10 seconds per play)**
- **Value-Added = 12%**

- ***Activities that exist because the process is inadequately designed or not functioning as designed.***
- ***Activities that could be eliminated without affecting the output to the customer.***

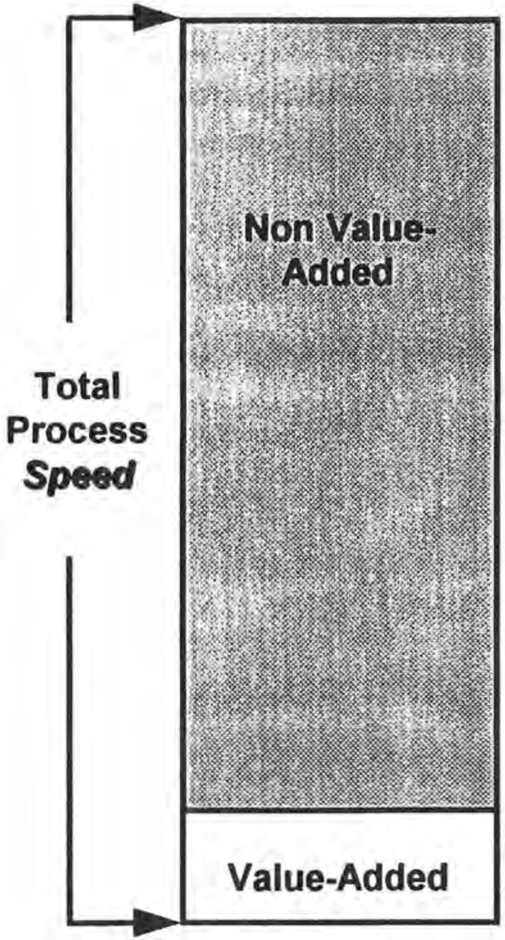
VALUE-ADDED ACTIVITIES

A step adds value if:

- The customer recognizes the value.
- It alters process input.
- It's done right the first time.
- It's required by law, regulation, policy or by health or safety considerations.

"Value-added is the value after processing, minus the value before processing"

Step 4, Task 1
Entitlement Formula



Total Process *Speed*

Non Value-Added

- Moving between departments
- Waiting time
- Sorting
- Batching
- Inspection
- Test
- Approvals
- Filing
- Correcting

Raw Cycle Time(RCT)...........X 3 = ENTITLEMENT

Value-Added

- Writing/Keying
- Answering phones
- Analyzing
- Assembling
- Drawing
- Mailing
- Education
- Packing
- Design

Step 4, Task 1: Determine Entitlement

Instructions

1. Review the process maps-Pages 62-68. Identify each step as value-added or non value-added.
2. Determine raw cycle time by adding estimates for all value-added steps only.
3. Estimate process entitlement by multiplying RCT by 3.

Examine the sample ENTITLEMENT. Use the worksheets provided to determine ENTITLEMENT.

Step 4, Task 2: Map the "IDEAL" Process

Conduct an "Ideal" Redesign

OBJECTIVES

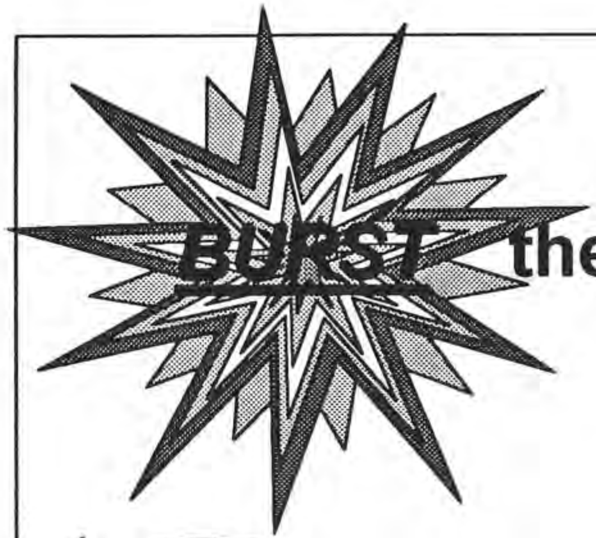
- Challenge existing assumptions.
- Identify breakthrough or major improvements.

Use the following worksheet to conduct an "ideal" redesign.

- List major problems that prevent you from realizing your entitlement.
- Put list of problems aside. Identify fundamental purpose for your process. Why does it exist?
- Imagine your process could be whatever you want it to be, subject to only two constraints.
    - Ideas may be possible
    - Your new process can be operational

Make a list of items describing the ideal process.

- Compare two lists. Look for ideas on your second list that don't emerge logically from a focus on problems.
- Look for potential solutions in some of the more promising characteristics of your ideal process.



BURST the Paradigms - Reduce Cycle Time

This new approach really works

We've done it this way before

What is the reason for this logical sequence?

8 5 4 9 7 6 3 2 0

Barney Dribble left the Soul-Ace Hotel and walked toward the parking lot. Without the benefit of moonlight or any artificial light, he was able to spot his black car 100 meters away. How was this possible?

Picture two plastic jugs filled with water. How could you put all this water into a barrel, without adding the jugs or any divider to the barrel, and still tell which water came from which jug?

Step 4,Task 2: Map the "IDEAL" Process

"Ideal" Redesign Worksheet
Major Problems with Process
Purpose for Process
Description of "Ideal" Process

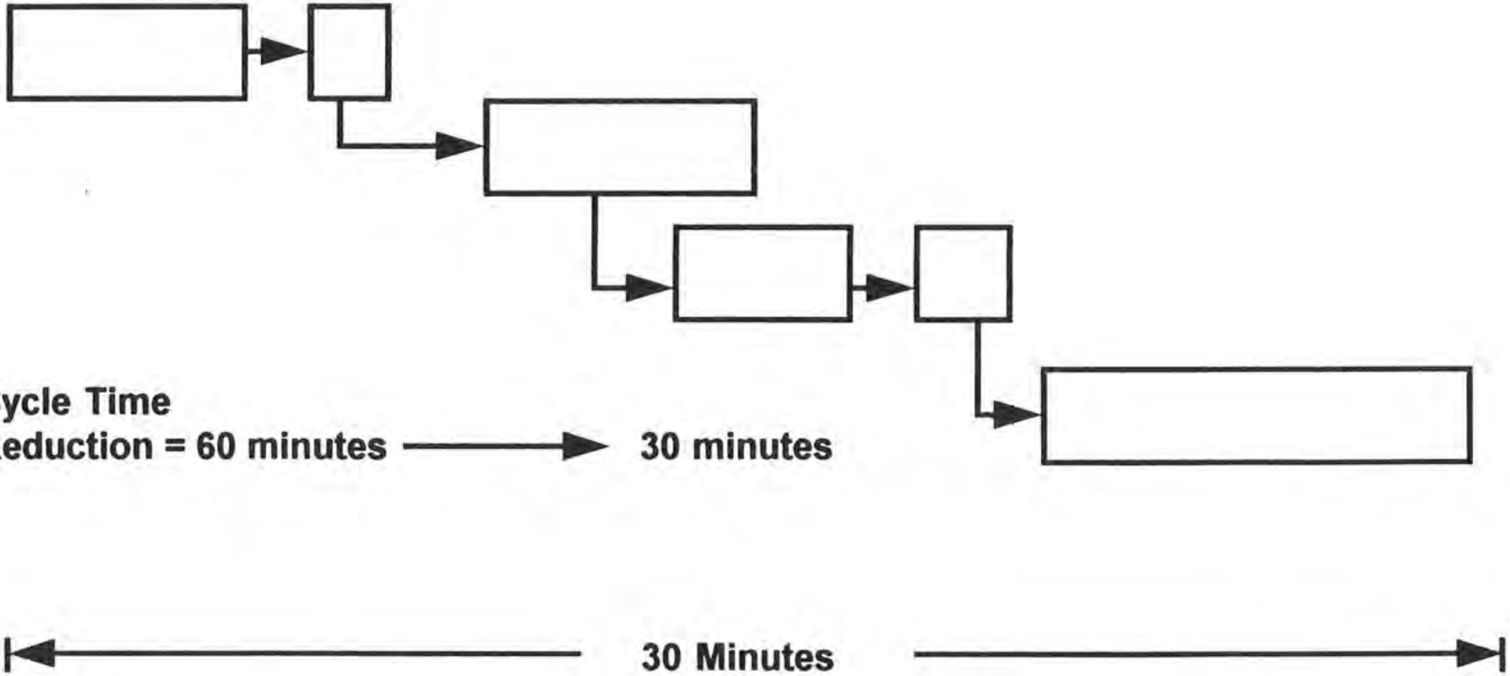
Step 4, Task 2: Map the "Can-Be" Process

Instructions

1. **Review value-added steps from pg. 63-68 worksheets, your "Cause for Pause" worksheets and your "ideal" redesign worksheet.**
2. **Make the process flow as it could exist based on your entitlement.**

Task 2: Map the "Can-Be" Process

Example: Pizza Process

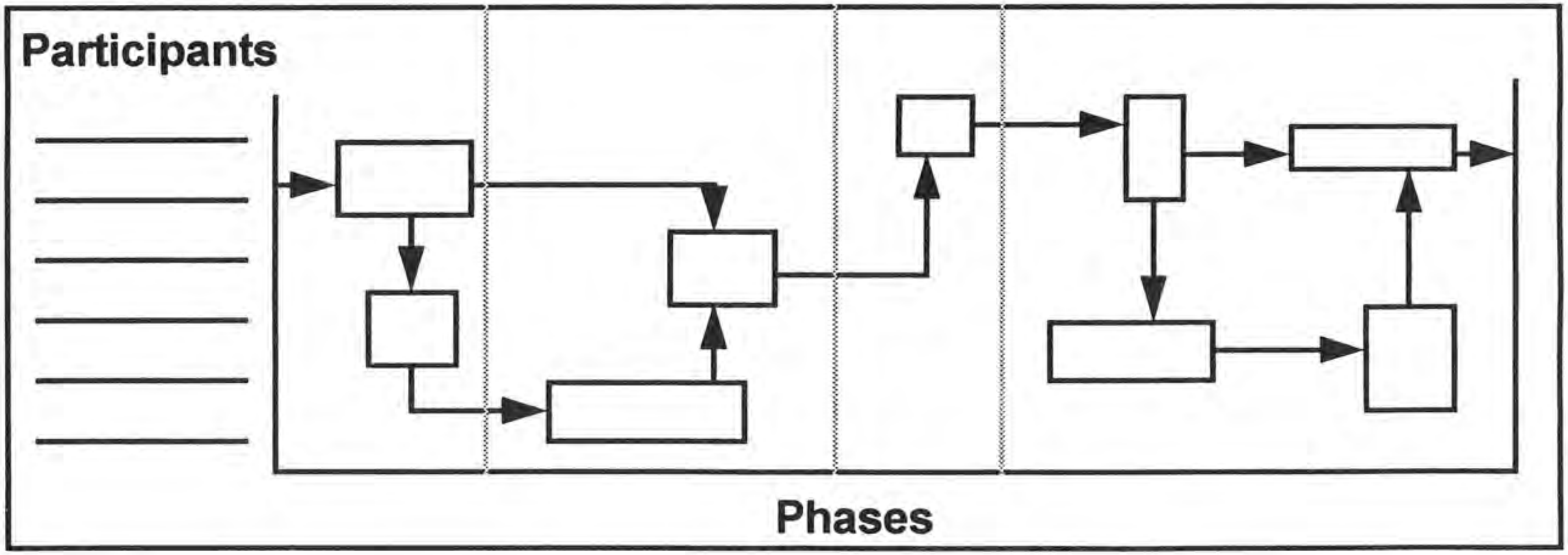


Cycle Time
Reduction = 60 minutes → 30 minutes

Task 2: Map the "Can-Be" Process

Instructions

- Determine the functions/participants of the new process.
- Determine the phases and time scale (use "as-is" if possible).
- Map the "Can-Be" process using the same procedure as "as-is" mapping (post-its).



CAN-BE
Ideal Process

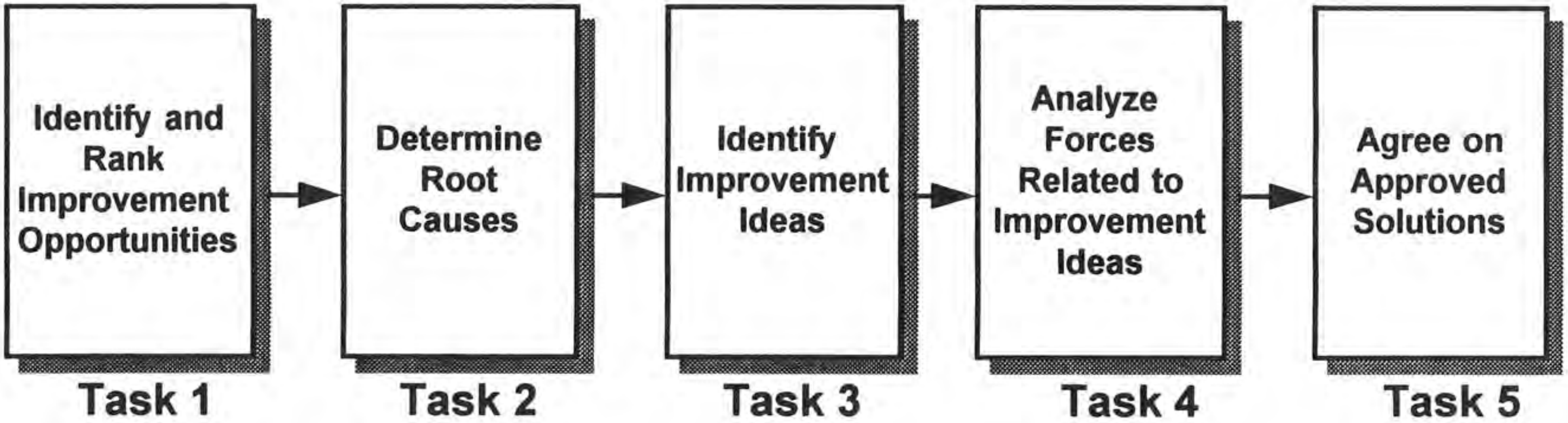
Phase One	Phase Two	Phase Three
REC/INSP	STORES	PLASTICS
HI-LO DRIVER -unloads trucks and scans directly to focused storage or stores -supplier delivers "C" parts directly to the line		UTILITY HI-LO/LUGGERS -visual check for material at point of use -move storage to point of use MATTEC -ideal long term, no backflush -parts/material consumed as product is assembled
Old process: 1 hr. 29 min New process: 7 min 5 sec	Old process: 11 hrs. 35 min. New process: -0-	Old process: 62hrs 2 min. New process:8 hrs. 2 min.

CAN-BE
Ideal Process

Phase Four	Phase Five	Phase Six
SUB-ASSEMBLY	FINAL ASSEMBLY	PALLETIZER
		HI-LO DRIVER -visual check of inventory -if required, move from point of production (sub/plastics) or focused storage to point of use PRODUCTION COUNTS -scanned as product goes up the elevator/conveyor (backflush)
Old process: 17 hrs. 15 min. New process: -0-	Combined with palletizer	Old process: 19 hrs. 40 min. New process: 2 hrs. 4 min.

TOTAL OLD: 112 HRS
TOTAL NEW: 10 HRS. 14 MIN.

Step 5: Identifying Root Causes and Proposed Solutions



Identify and Rank Improvement Opportunities

Task 1

Determine Root Causes

Task 2

Identify Improvement Ideas

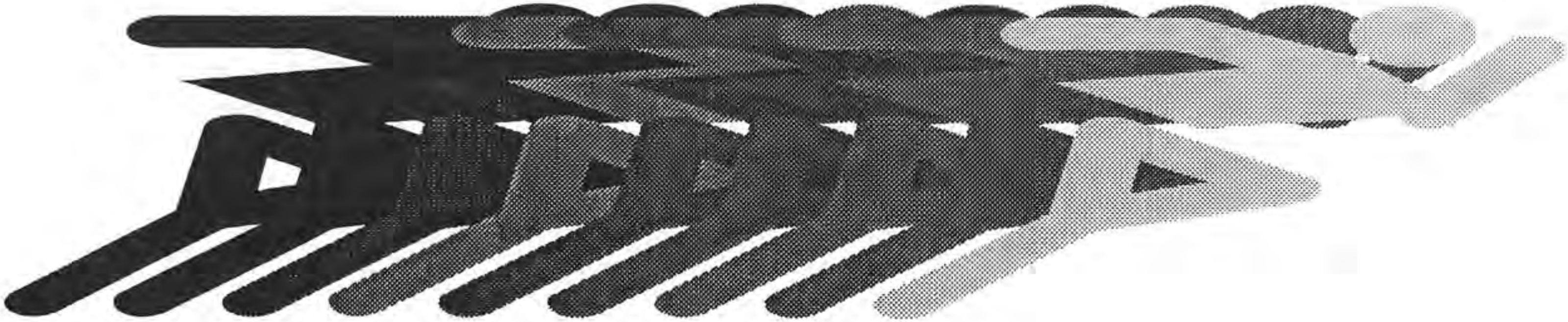
Task 3

Analyze Forces Related to Improvement Ideas

Task 4

Agree on Approved Solutions

Task 5



Step 5,Task 1: Identify and Rank Improvement Opportunities

- Based on a review of your proposed map, list opportunities to improve process *Speed.*
- For each opportunity, rank its impact on process *Speed* as high, medium or low.
- For each opportunity, rank the prospects for the team to solve the problem as high, medium or low.
- Based on the results of above, rank each opportunity as a strong, moderate, or weak candidate for analysis.

Prioritizing Obstacles to Improvement

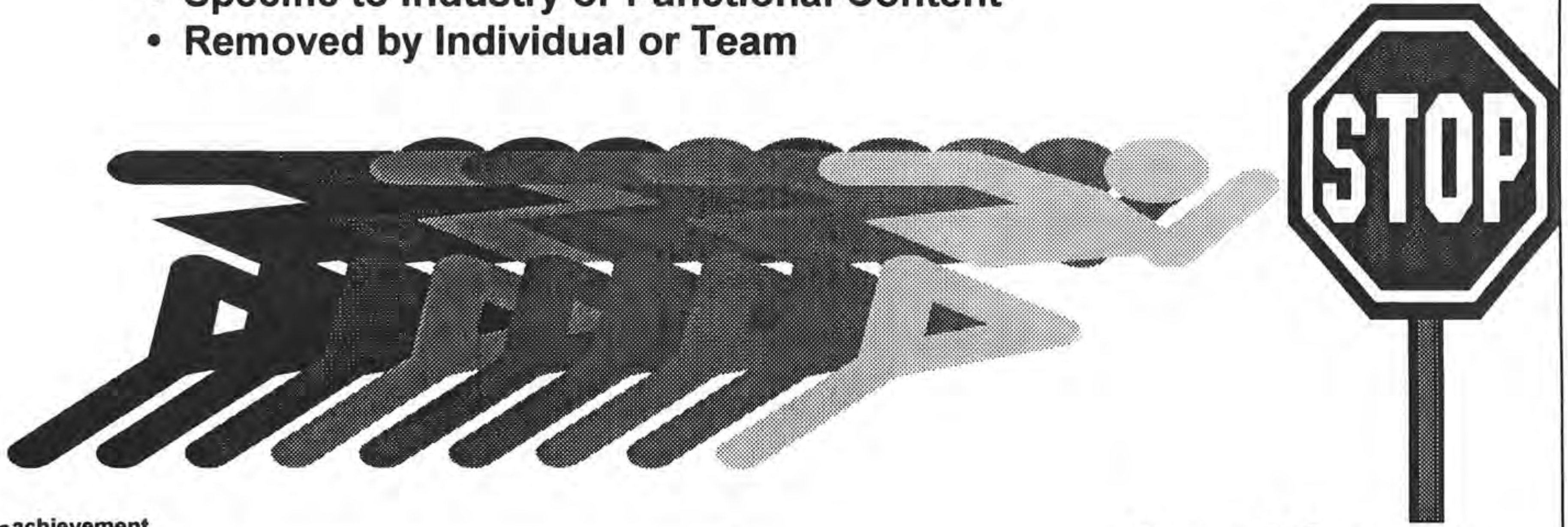
Improvement Opportunity	Effect on Process *Speed*	Solvable by Team	Candidate for Analysis

What is Cause for Pause??

Cultural Barriers
- Existing Habits, Behaviors, Attitudes
- Removed by Cross-Functional Teams and Managers with a Facilitator

Process Barriers
- Directly Prevent Reaching Entitlement
- Removed by Cross-Functional Teams and Managers with a Facilitator

Technical Barriers
- Specific to Industry or Functional Content
- Removed by Individual or Team



Cultural Barriers Reduce *Speed*

C1. Lack of cycle time reduction mindset

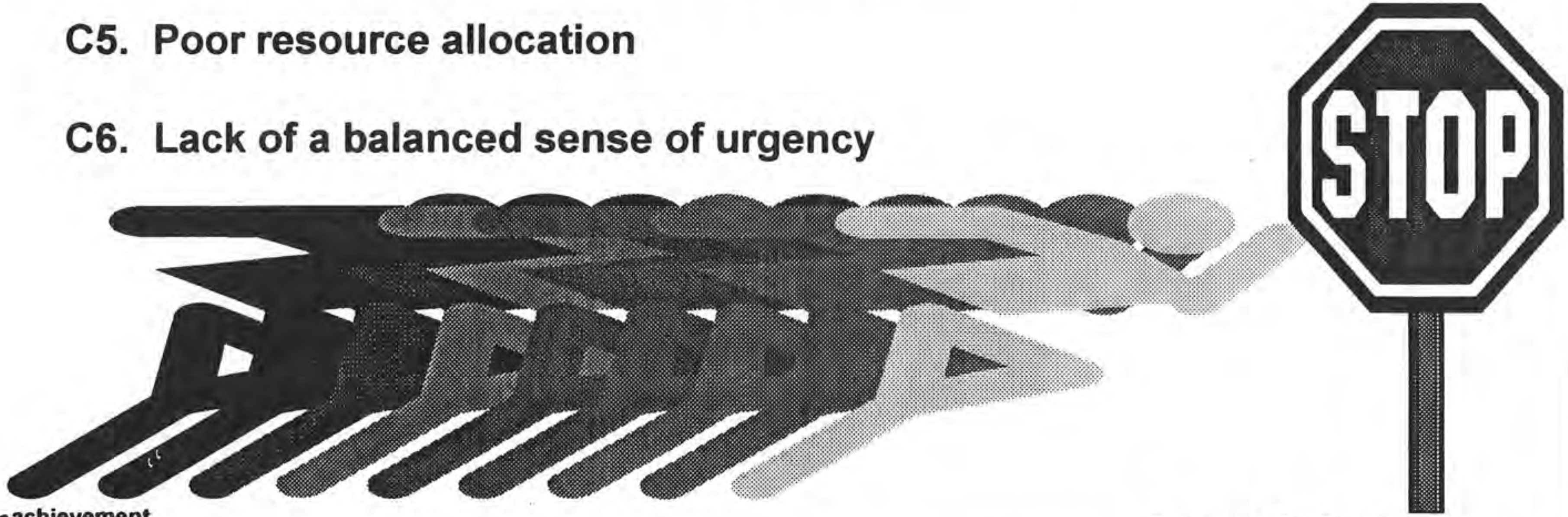
C2. Organization structure

C3. Accounting, measurements, controls, and incentives

C4. Lack of cycle time reduction knowledge/skills

C5. Poor resource allocation

C6. Lack of a balanced sense of urgency



Cultural Barriers Reduce *Speed*

C7. Cultural blindness

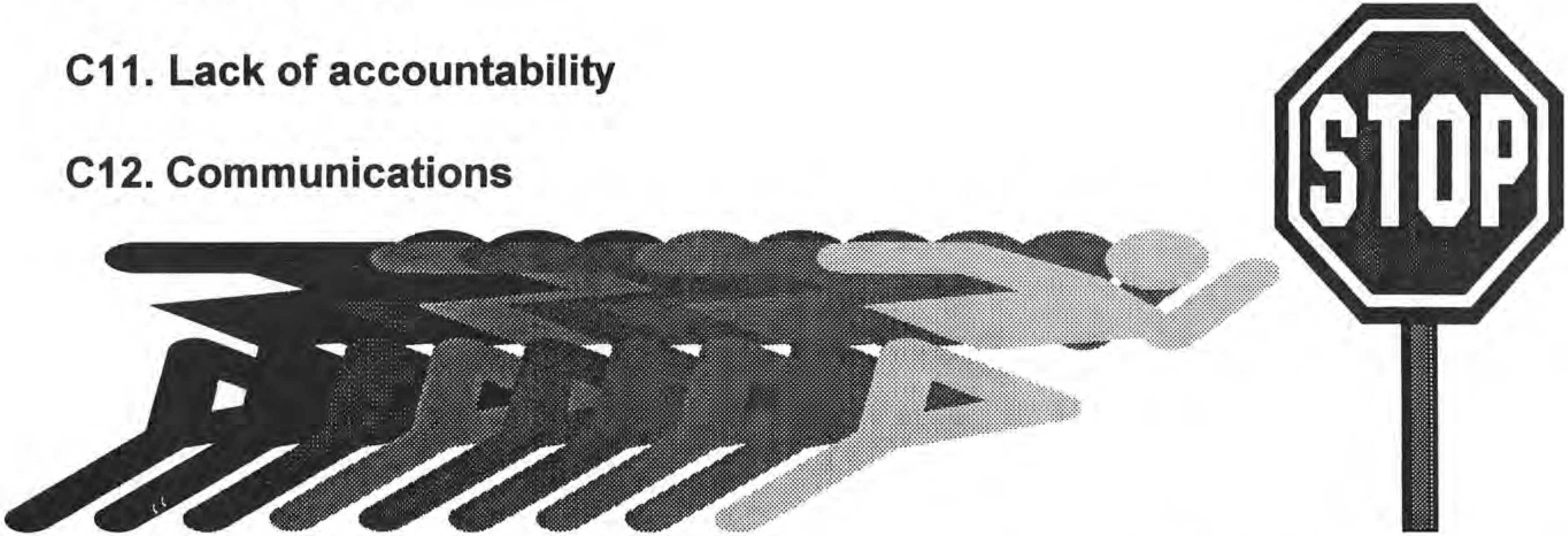
C8. Data integrity

C9. Lack of leadership forcing function

C10. Lone ranger

C11. Lack of accountability

C12. Communications



METHODS TO IDENTIFY CULTURAL BARRIERS

- Analysis of process maps
- Data collection to expose delays
- Distributional analysis of data
- Brainstorming from experience
- Use generic barrier list and problem solving tools
- Use of "apply resources vs. cycle time reduction" mindset
- Visualization of barriers due to forced cycle time reduction
- Beginning the removal process to expose other barriers
- Sharing best practices experimentation and simulation

IDENTIFYING CULTURAL BARRIERS

(instructions)

- Put yourself in the place of the teams chartered to improve speed within your priority core business.

- Which cultural barriers are likely to interfere with team success?

- Which one presents the greatest barrier to team success?

- Identify some characteristics of this barrier within the organization.

Process Barriers Reduce *Speed*

P1. Housekeeping

P2. Process Capability

P3. Inspection

P4. Rework/Reject

P5. Maintenance

P6. Asynchronous Flow

P7. Disrupted Flow

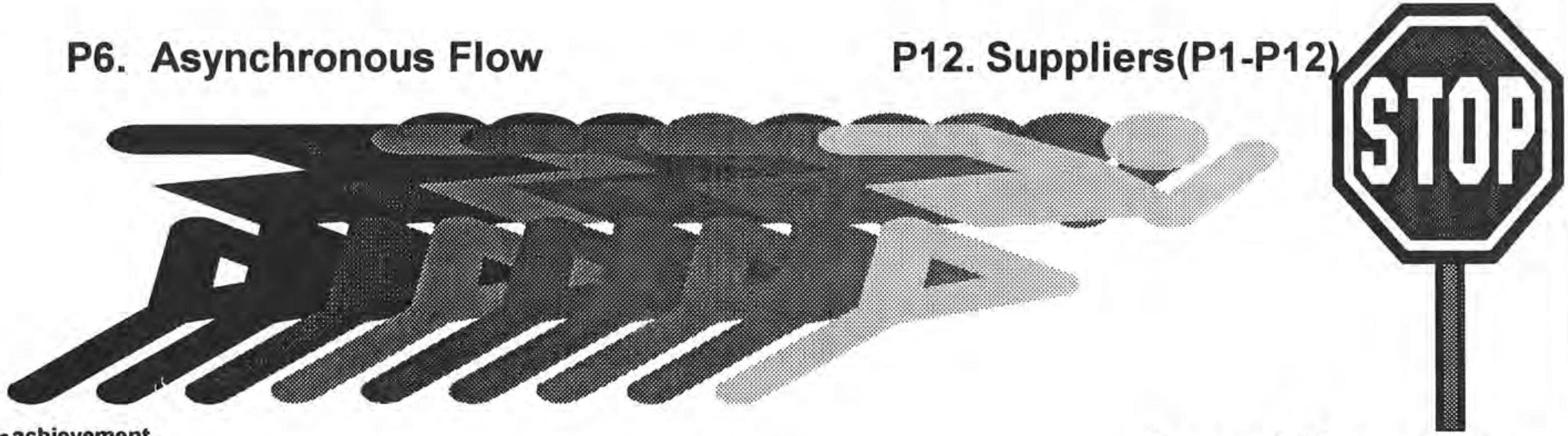
P8. Set/Up Changeover

P9. Stock

P10. Push Scheduling

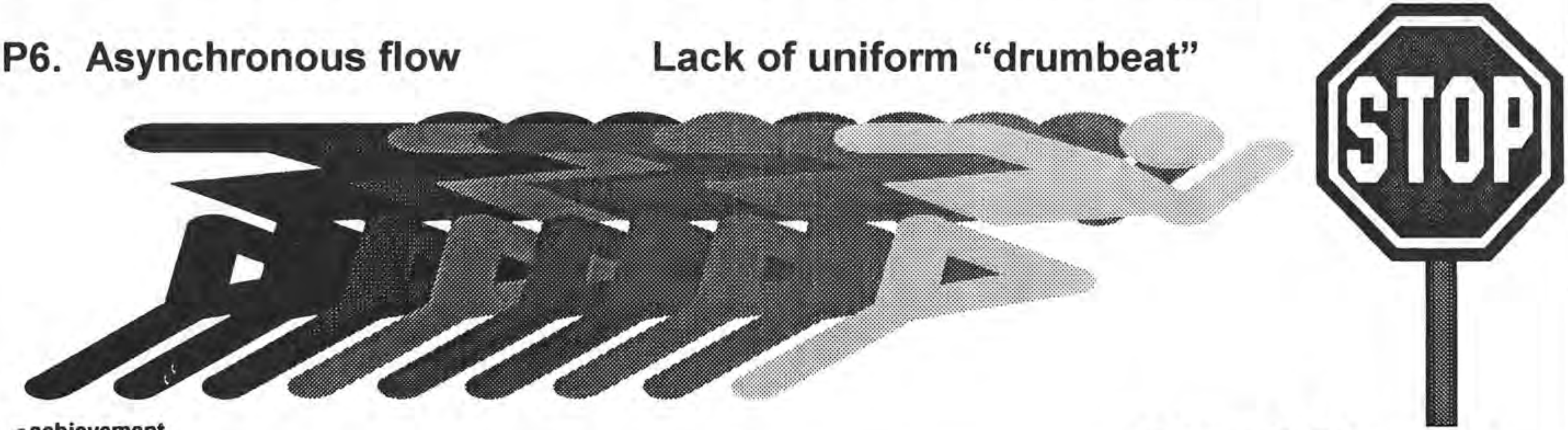
P11. Design Variances

P12. Suppliers(P1-P12)



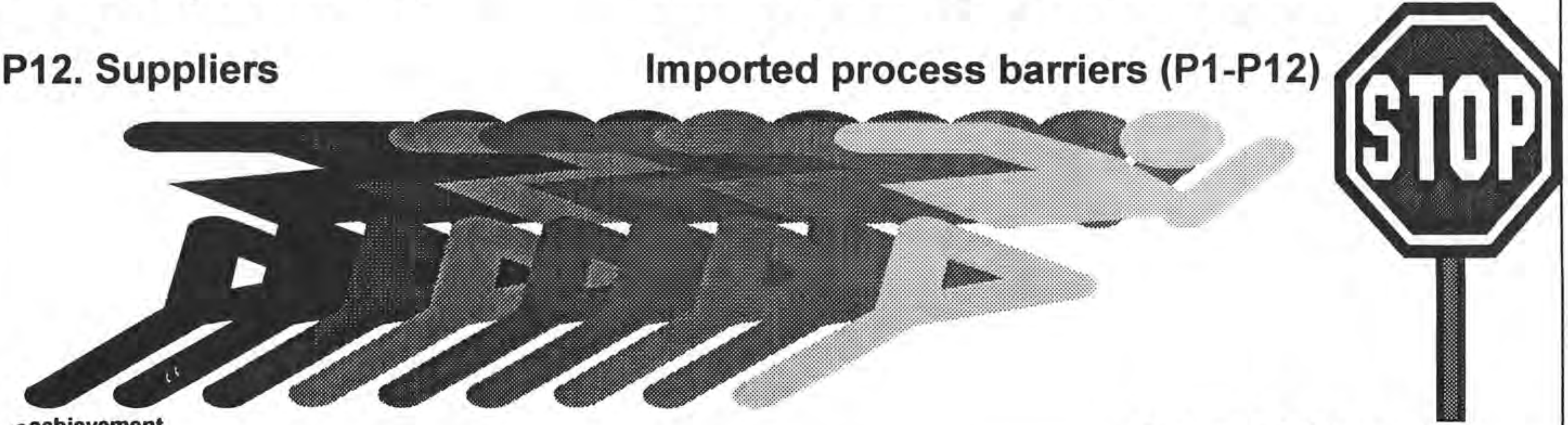
Process Barrier Definitions

P1. Housekeeping	A place for everything. Everything in its place
P2. Process Capability	Inability to consistently meet expectations
P3. Inspection	Need to check or review to insure quality
P4. Rework? Reject	Work not done right the first time
P5. Maintenance	Planned or unplanned equipment downtime
P6. Asynchronous flow	Lack of uniform "drumbeat"

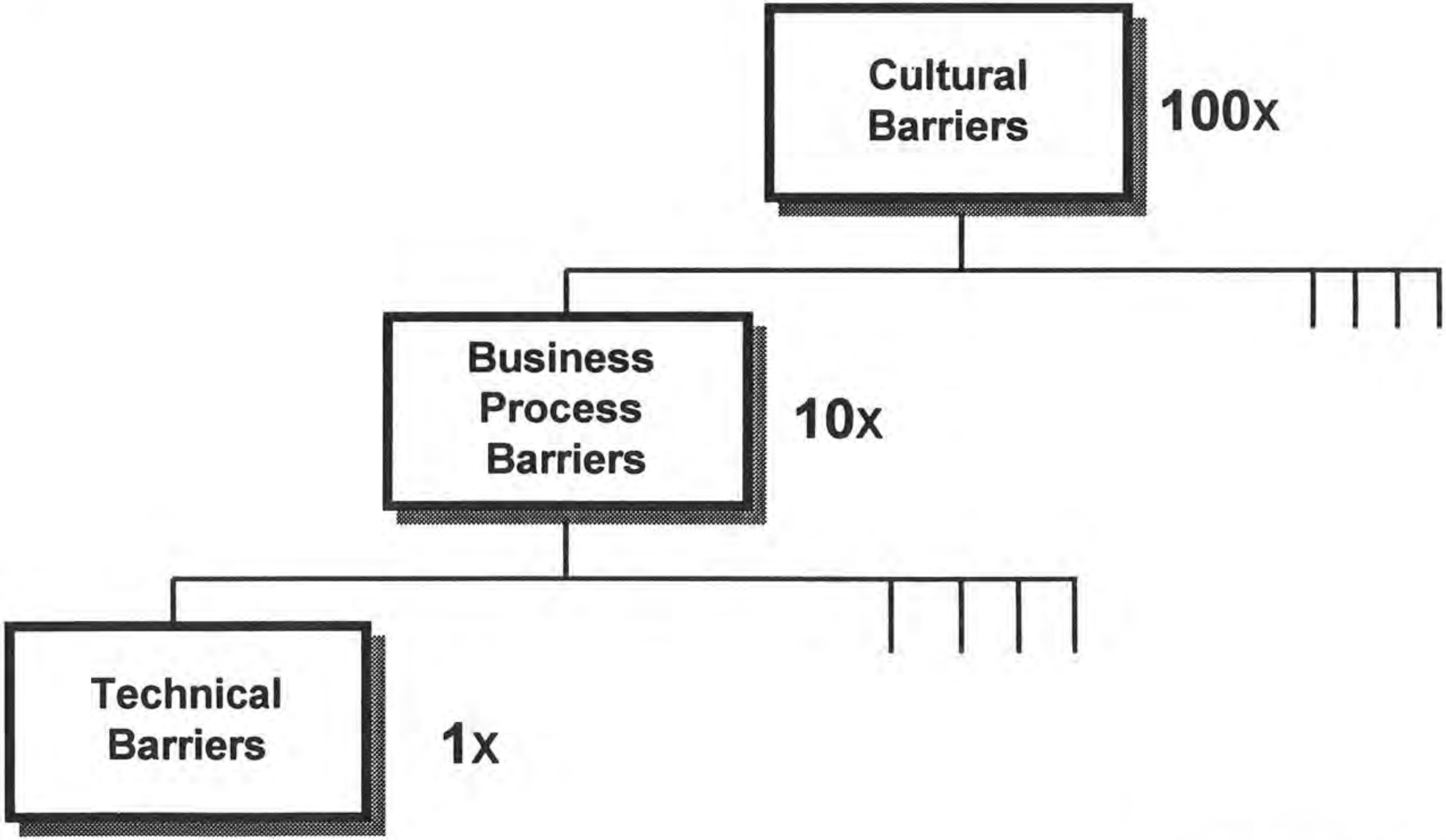


Process Barrier Definitions

P7. Disrupted Flow	Excessive distances, floor space & movement
P8. Set Up/Changeover	Lack of flexibility, small lot capability
P9. Stock	Inefficient materials management
P10. Push Scheduling	Production at the convenience of the supplier
P11. Design Variances	Lack of product/product line rationalization
P12. Suppliers	Imported process barriers (P1-P12)



Impact of Eliminating Barriers



Cultural Barriers 100x

Business Process Barriers 10x

Technical Barriers 1x

Step 5, Task 2: Determine Root Causes

Identifying Barriers

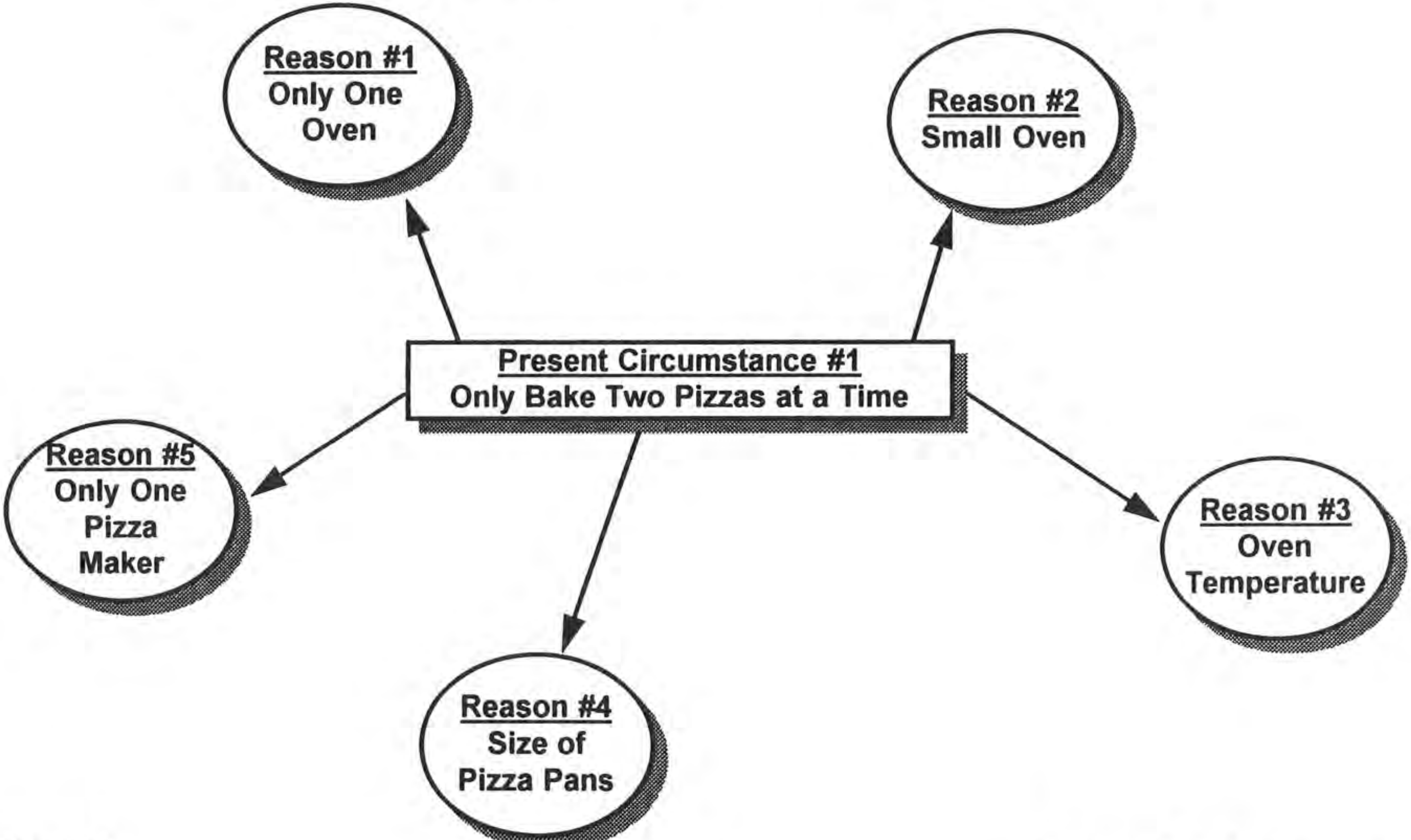
Potential Barriers

Brainstorm a list of potential barriers to your process.

IMPORTANT: **Notify your Champion of the cultural barriers that block your improvement efforts.**

Task 2: Determine Root Causes

Example: Layered Cause-Effect Mapping



Present Circumstance #1
Only Bake Two Pizzas at a Time

Reason #1
Only One Oven

Reason #2
Small Oven

Reason #3
Oven Temperature

Reason #4
Size of Pizza Pans

Reason #5
Only One Pizza Maker

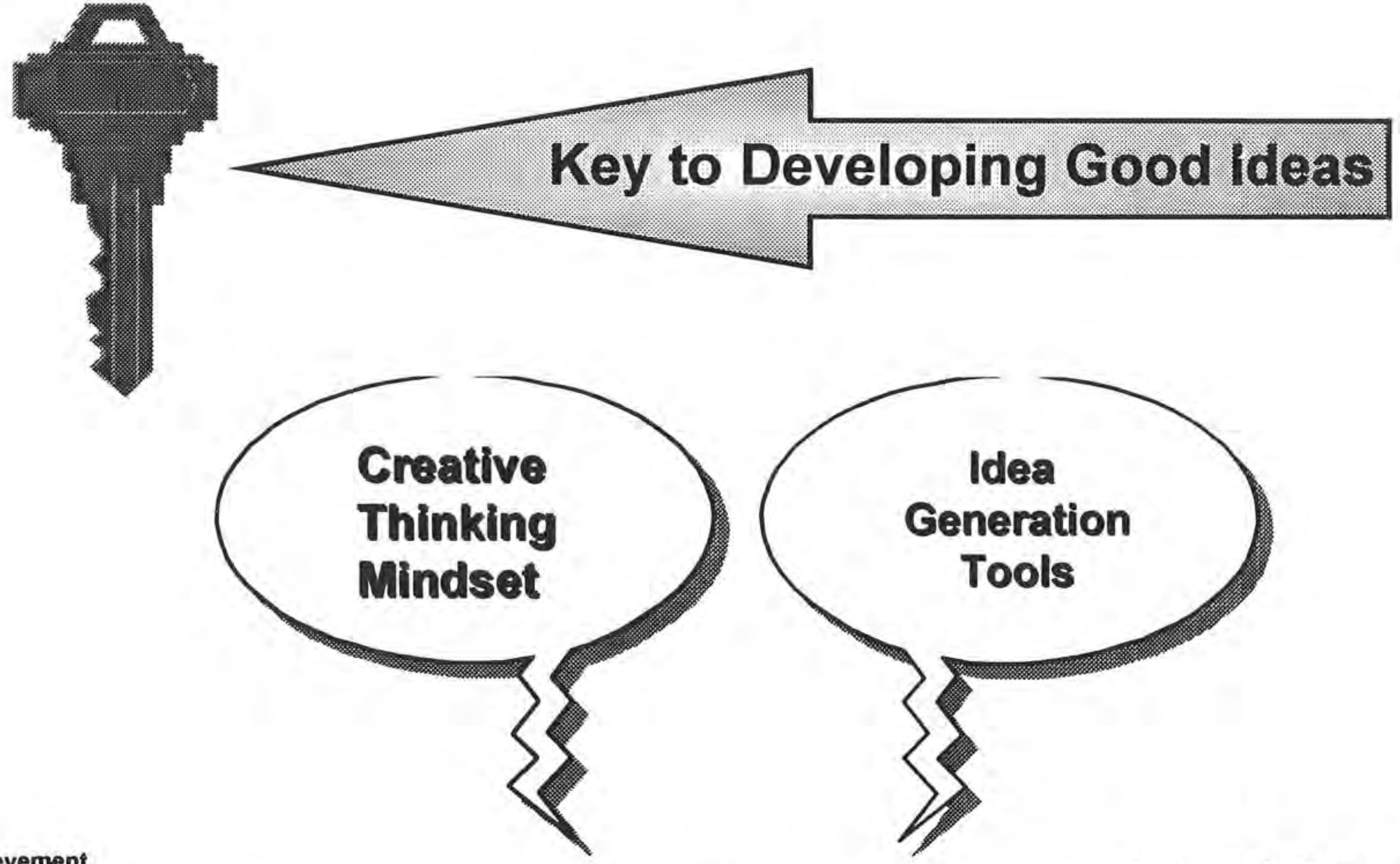
Step 5, Task 2: Determine Root Causes

Develop a Layered Cause-Effect Map

Instructions

- ✓ Select a process barrier that blocks ***speed*** in your process.
- ✓ Next, conduct a brainstorming session to identify as many potential causes for the process barriers as possible. Do not worry about categories or relationships.
- ✓ Edit your list and combine similar ideas into separate categories.
- ✓ Label each category.
- ✓ Use the Cause-Effect Map to show the relationship between the causes leading to each major cause (present circumstance).

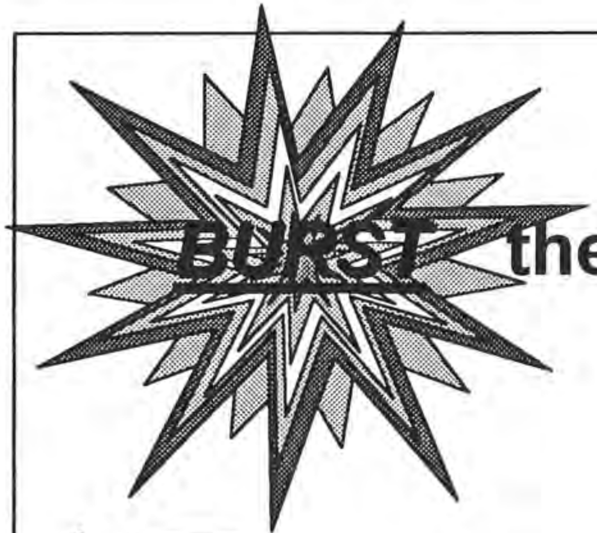
Step 5, Task 3: Identify Improvement Ideas



Key to Developing Good ideas

Creative
Thinking
Mindset

Idea
Generation
Tools



BURST the Paradigms - Reduce Cycle Time

We've done it this way before

This new approach really works

How many grooves are there on each side of a standard 33 1/3 record album that has *six* songs on each side?

Little Ryan was bragging about his school's hockey team. "In the last game we played, we managed to win without a man scoring a goal." Since the final score was 3 to 1, how was that possible?

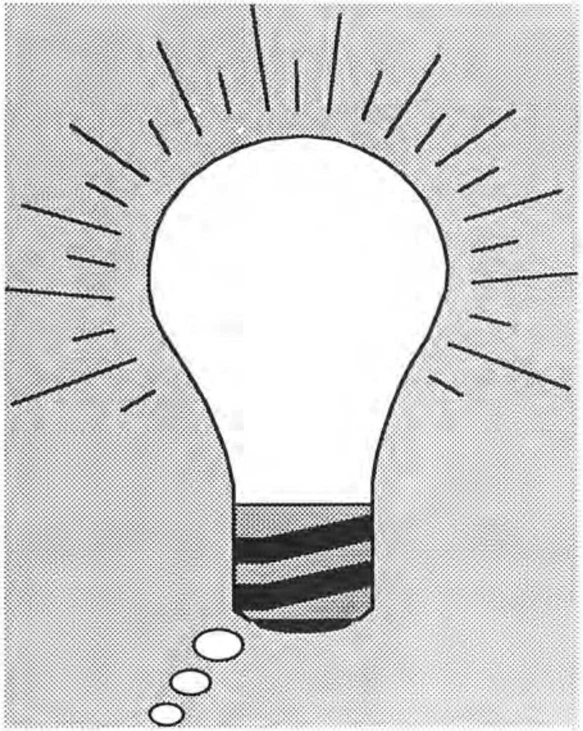
What are the two next letters in the following series?

A E F H I K L M

Step 5, Task 3: Identify Improvement Ideas

Idea Generation Tools

- Brainstorming
- Challenging Assumptions
- Solution Mapping
- Ideal Redesign



Step 5, Task 3: Identify Improvement Ideas

Reviewing the results of your root cause analysis, develop a list of improvement ideas. Indicate the cause(s) each idea addresses.

Improvement Idea	Root Cause(s) Addressed

Task: Analyze Forces Related to Implementing Ideas

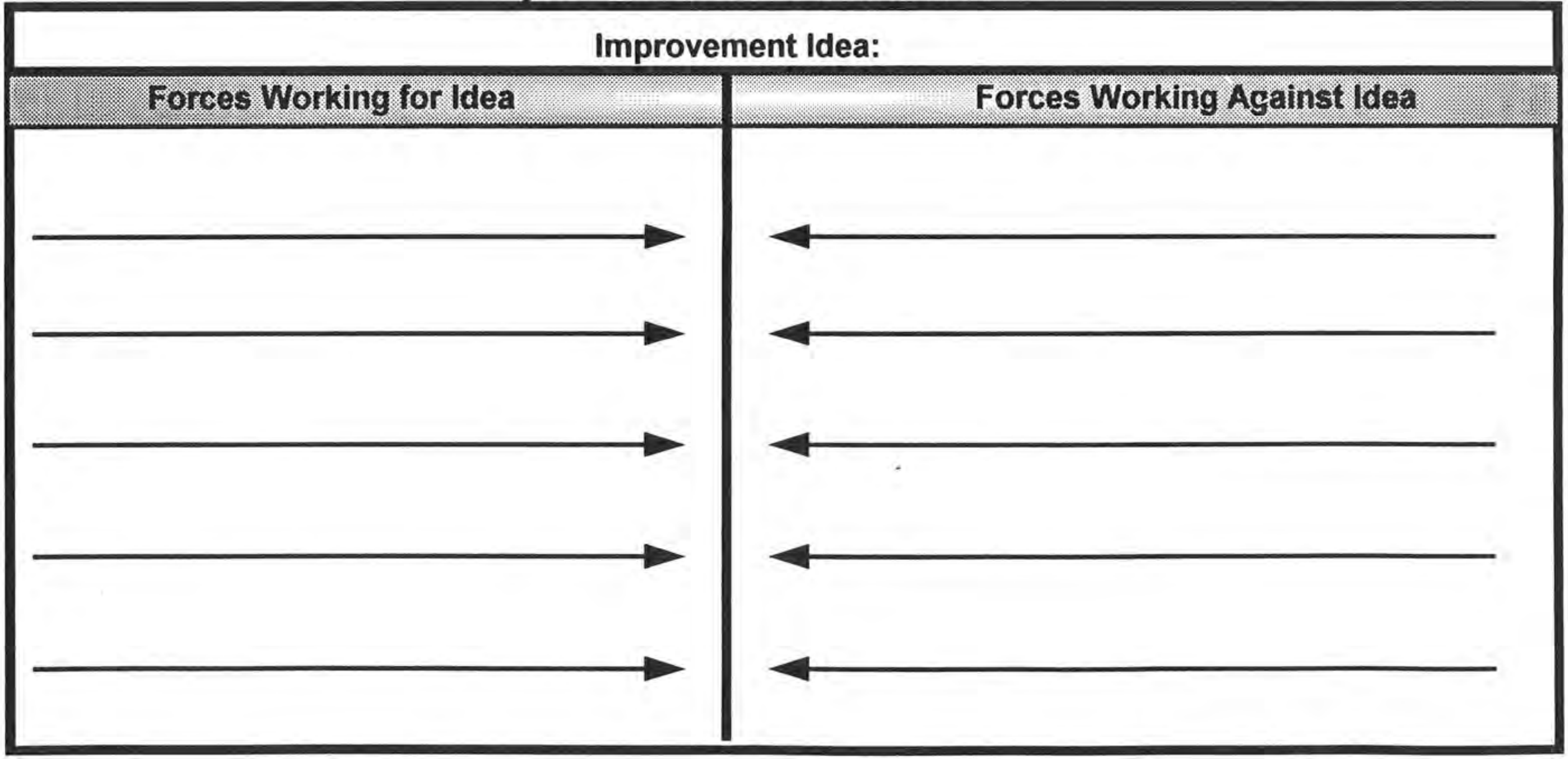
Example: Force Field Analysis

Improvement Idea: Buy new Pizza Oven

Forces Working for Idea	Forces Working Against Idea
Make more pizzas faster →	← Expensive
Eliminates major ***speed*** bottleneck →	← Little working capital
30 minute delivery a market must →	← Financing increases risks
20% discounts available →	← Requires kitchen redesign

Task 4: Analyze Forces Related to Implementing Ideas

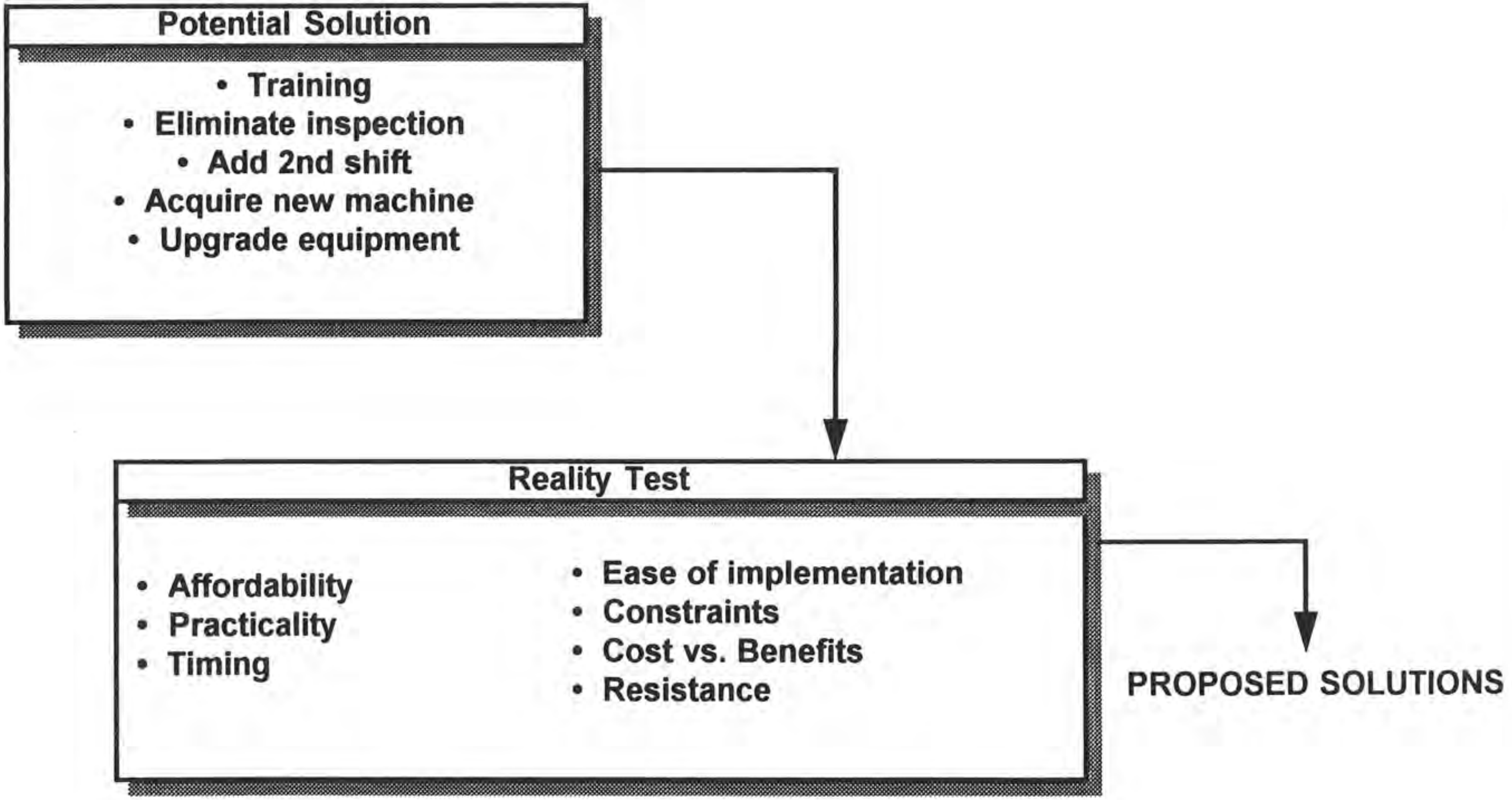
Conduct a force field analysis for at least one of the improvement ideas you identified in Task 3



Improvement Idea:

Forces Working for Idea	Forces Working Against Idea
→	←
→	←
→	←
→	←
→	←

Task 5: Agree on Proposed Solutions



Potential Solution

- Training
- Eliminate inspection
- Add 2nd shift
- Acquire new machine
- Upgrade equipment

Reality Test

- Affordability
- Practicality
- Timing
- Ease of implementation
- Constraints
- Cost vs. Benefits
- Resistance

PROPOSED SOLUTIONS

Task 5: Agree on Proposed Solutions

Rank Proposed Solutions

- List Improvement ideas.
- For each idea:
  - Rank potential for improving process ***speed*** as high, medium, or low.
  - Rank potential cost as high, medium, or low.
  - Rank difficulty or risk of implementing (based on force field analysis) as high, medium, or low.
  - Rank expected payback or R.O.I. as short, medium, or long term.
  - Rank impact on the quality of the product or service provided as none, slightly improved, or greatly improved.

Rank Proposed Solutions

Proposed Solutions	Potential Impact on Process ***Speed***	Potential Cost	Difficulty or Risk	R.O.I.	Implementation Priority	Impact on Quality

Realistic Process

Phase One	Phase Two	Phase Three
REC/INSP	STORES	PLASTICS
HI-LO DRIVER -unloads trucks and scans directly to focused storage or stores -supplier delivers "C" parts directly to the line	-pull ticket required for parts from stores	UTILITY HI-LO/LUGGERS -visual check for material at point of use -move storage to point of use OPERATOR/ASSEMBLER -places barcoded sticker on standard container. Max wait for production-8hrs. HI-LO -Scans backflush and moves to storage or point of use -enters return of raw materials
Old process: 1 hr. 29 min New process: 7 min 5 sec	Old process: 11 hrs. 35 min. New process: 5 hrs. 47 min.	Old process: 62 hrs 2 min New process: 8 hrs. 6 min.

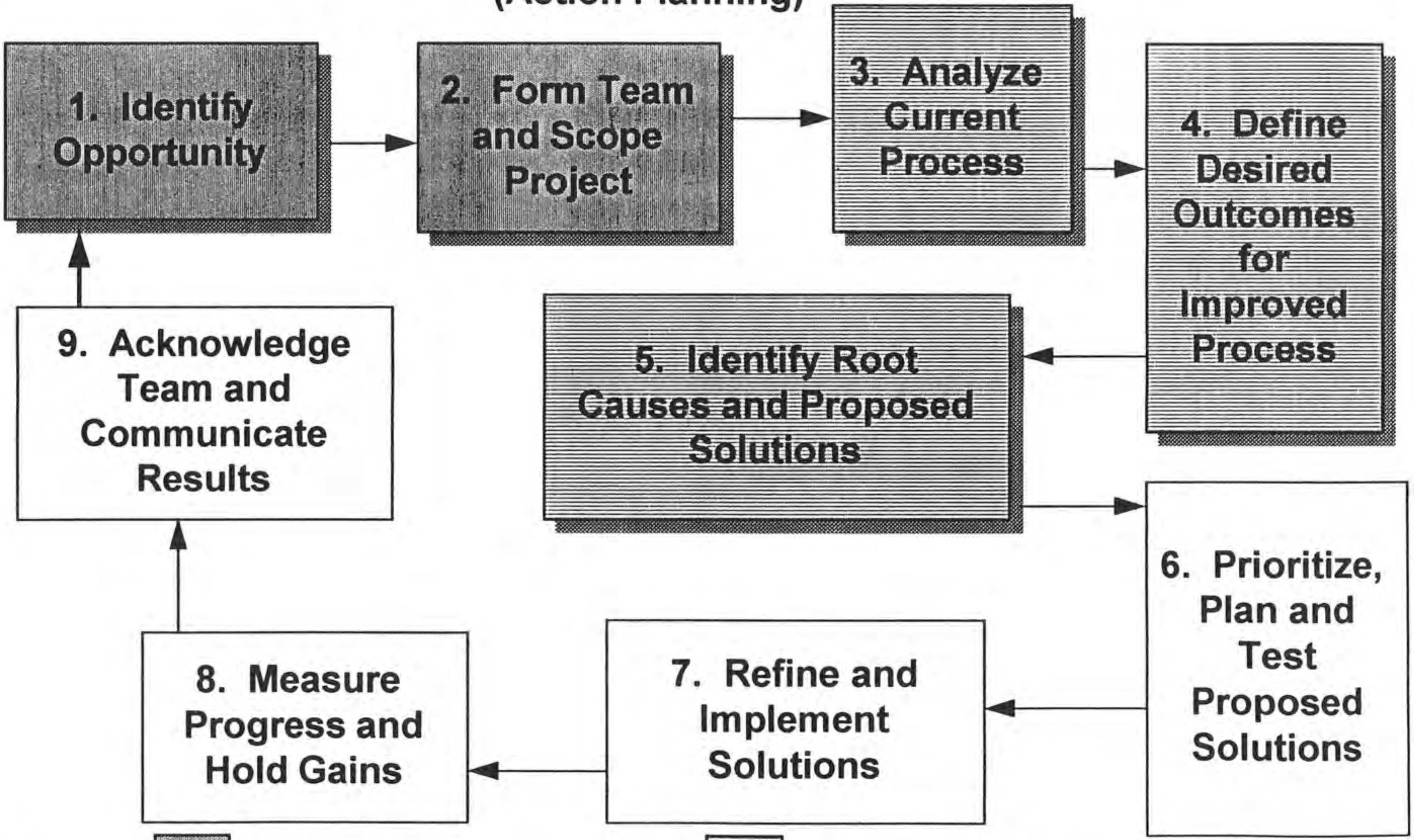
Realistic Process

Phase Four	Phase Five	Phase Six
SUB-ASSEMBLY	FINAL ASSEMBLY	PALLETIZER
LUGGER -visual check of inventory -move from storage to point of use ASSEMBLER -fills out backflush ticket. Max wait for production-2 hrs. HI-LO/LUGGER -scans backflush and moves to storage or point of use Old process: 17 hrs. 15 min. New process: -0-	Combined with palletizer	HI-LO DRIVER -visual check of inventory -if required, move from point of production (sub/plastics) or focused storage to point of use PRODUCTION COUNTS -scan at palletizer by skid Old process: 19 hrs. 40 min. New process: 2 hrs. 32 min.

TOTAL OLD: 112 HRS
TOTAL NEW: 18 HRS. 44 MIN.

Nine Step Problem Identification and Solving Model

(Action Planning)



1. Identify Opportunity

2. Form Team and Scope Project

3. Analyze Current Process

4. Define Desired Outcomes for Improved Process

5. Identify Root Causes and Proposed Solutions

6. Prioritize, Plan and Test Proposed Solutions

7. Refine and Implement Solutions

8. Measure Progress and Hold Gains

9. Acknowledge Team and Communicate Results

▓ Done by Process Managers

▤ Workshop Focus

Steps 6-9
Action Planning

Persons Responsible:

- Process Owner/Manager
- Team Champion
- Chartering Managers
- Team Members
- All Company Employees

TEAM ACTION PLAN

CYCLE TIME
REDUCTION

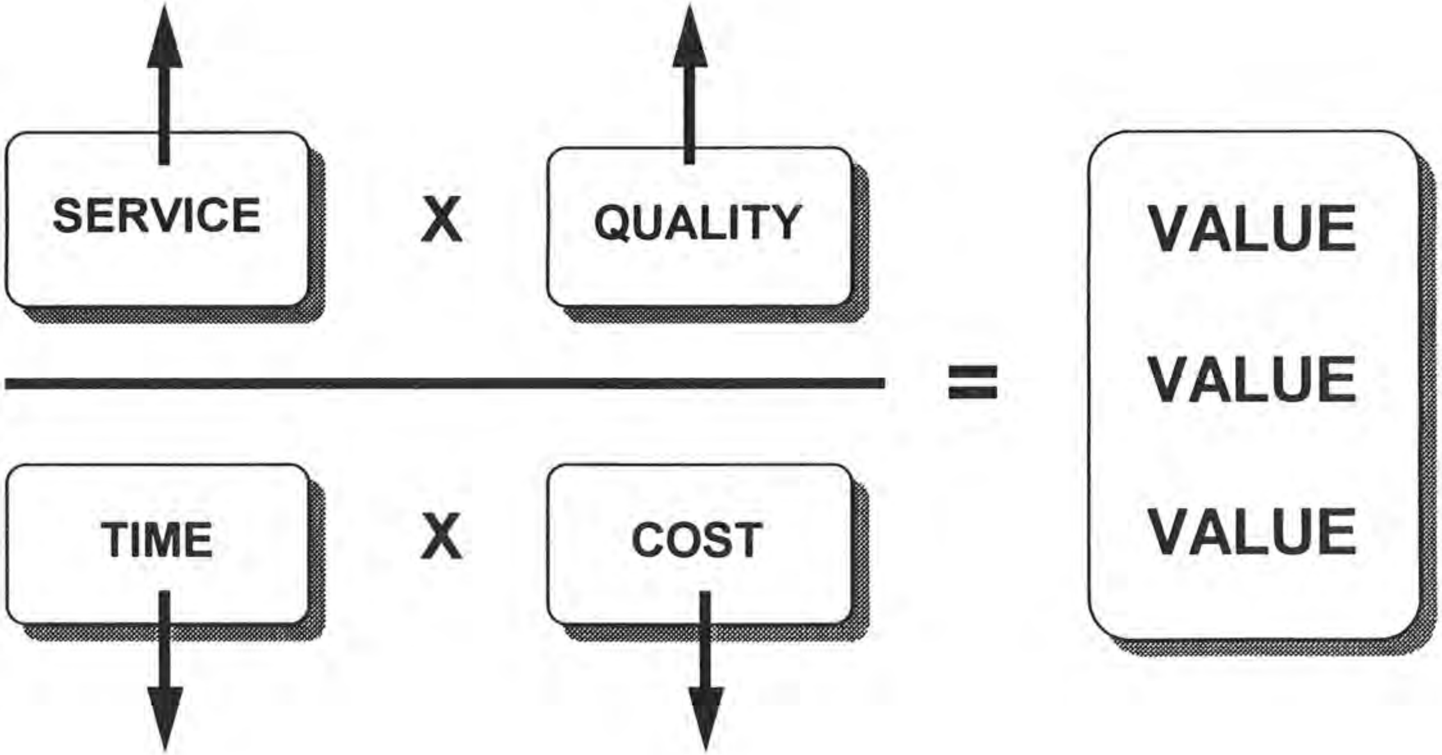
TASK	TIMING	PERSON(S) RESPONSIBLE	BARRIERS	MANAGEMENT ROLES/RESOURCES

DEPLOYMENT ISSUES & ACTION ITEMS

EXAMPLES

ISSUES	ACTION ITEMS
Who will be the facilitators?	Select and train facilitators
Who will be process managers?	Cycle time reduction assessment
How many teams?	Select based on organizational goals
Champion	Assign champion
Training and education	Prepare deployment plan

Improved *Speed* = Very Satisfied Customer
A Competitive Advantage
Value Added to All the "Stakeholders"



SERVICE X QUALITY

TIME X COST

=

VALUE

VALUE

VALUE

The BENEFITS are "*Overwhelming*"

- Customer gets what they want, when they want it--Customer value
- Cycle times dramatically reduced
- Costs substantially reduces (effectiveness and efficiency)
- Capacity is increased
- Waste is minimized
- Profit margins improve
- Results come quickly
- Everyone "wins"

**An Unparalleled
Competitive
Advantage**

The BENEFITS are "*Overwhelming*"

- Tough-to-copy organizational capability
- Establishes industry standards
- Position as innovator
- Incorporates the latest technology
- Ability to respond forecast changes
- Reduces time to detect and correct problems
- Reduced overhead
- Drives information flow across and within functions

An Unparalleled Competitive Advantage

Says "WHO" ??

- IBM--Boca Raton
- IBM--Brazil
- Citicorp
- Boeing
- McDonnell Douglas
- Chrysler Corp.
- Allied Signal
- Martin Marietta
- Adelphia Cable

"NOT"CompUSA